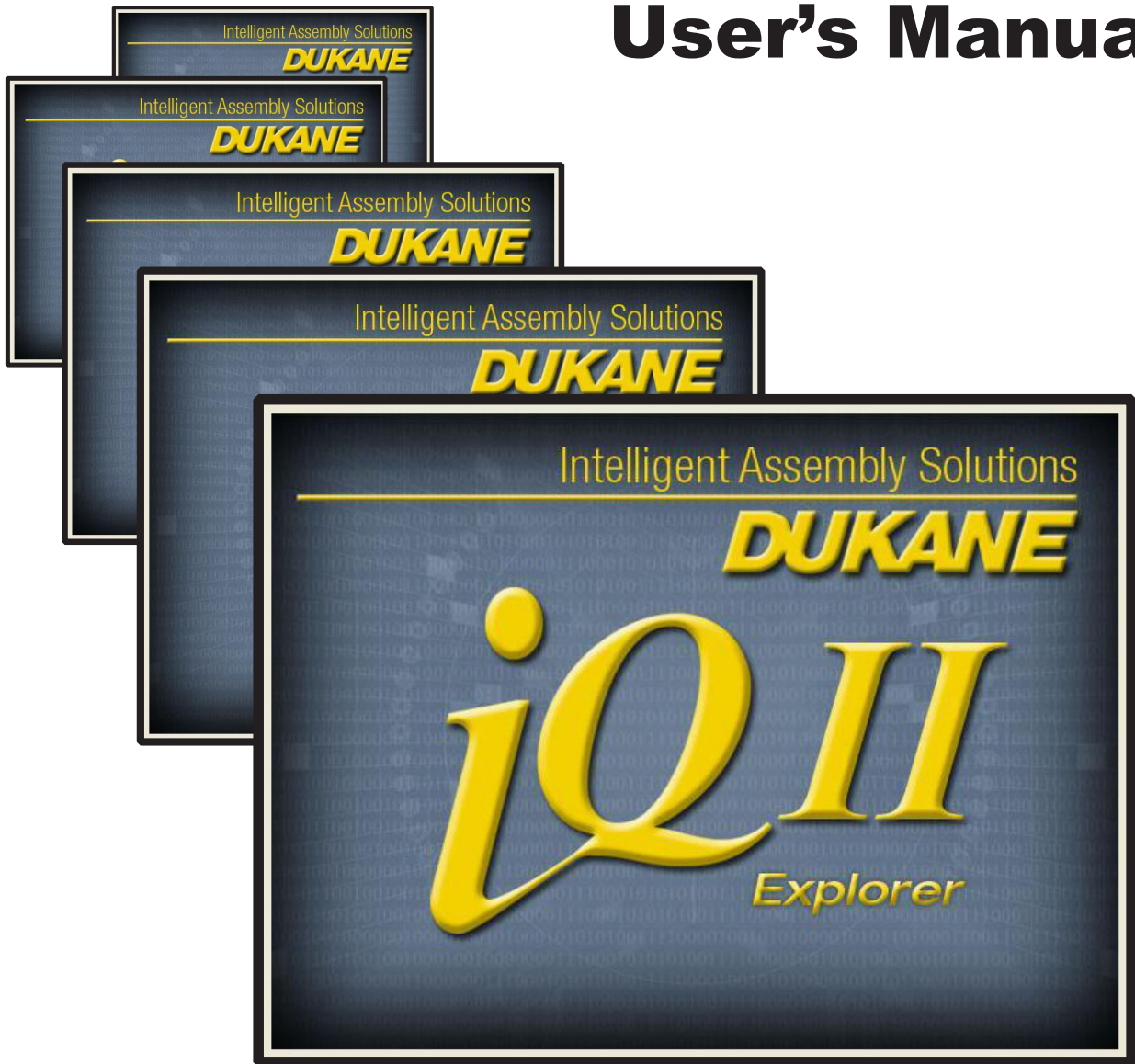


DUKANE

Intelligent Assembly Solutions

iQ Explorer II **User's Manual**



Dukane Part No. 403-585-00

Dukane Intelligent Assembly Solutions • 2900 Dukane Drive • St. Charles, Illinois 60174 USA • TEL (630) 797-4900 • FAX (630) 797-4949

ISO 9001:2008 Products are manufactured in ISO
registered facilities.



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Dukane Intelligent Assembly Solutions
2900 Dukane Drive
St. Charles, IL 60174 USA

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This user's manual documents product features, hardware, and controls software available at the time this user's manual was published.

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Dukane ultrasonic equipment is manufactured under one or more of the following U.S. Patents:
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3,780,926 * 4,131,505* 4,277,710* 5,798,599 5,880,580 6,984,921 7,225,965 7,475,801,
7,819,158 and, 8,052,816

Revision History

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- 00	Original release.	March 7, 2013

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SECTION 1

Introduction

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General User Information

Read This Manual First

Before operating your software, read this User's Manual to become familiar with it. The manual is organized to allow you to learn how to effectively operate this program. Examples given are chosen for their simplicity to illustrate basic operation concepts.

Notes, Cautions and Warnings

Throughout this manual we use NOTES to provide information that is important for the successful application and understanding of the product. A NOTE block is shown to the right.

In addition, we use special notices to make you aware of safety considerations. These are the CAUTION and WARNING blocks as shown here. They represent increasing levels of important information. These statements help you to identify and avoid hazards and recognize the consequences. One of three different symbols also accompany the CAUTION and WARNING blocks to indicate whether the notice pertains to a condition or practice, an electrical safety issue or a operator protection issue.

Drawings and Tables

The figures and tables are identified by the section number followed by a sequence number. The sequence number begins with one in each section. The figures and tables are numbered separately. The figures use Arabic sequence numbers (e.g. -1, -2, -3) while the tables use roman sequence numerals (e.g. -I, -II, -III). As an example, Figure 3-2 would be the second illustration in section three while Table 3-II would be the second table in section three.

NOTE

Note statements provide additional information or highlight procedures.

CAUTION



Caution statements identify conditions or practices that could result in damage to the equipment or other property.

WARNING



Warning statements point out conditions or practices that could result in personal injury or loss of life.



Condition
or Practice



Electrical
Hazard



Hearing
Protection

iQ Explorer II Overview

This program enhances any compatible *iQ Series ES* ultrasonic generator/press through a user interface that allows monitoring and setup to be done virtually anywhere. Whether installed on your desktop or laptop PC, this tool gives more flexibility and control for the processes you manage.

Key Features

iQ Explorer II User Interface

- **Windows operating system** - Familiar file folder menu structure, requiring no special training.
- **Touch screen input** - Makes programming easier. All welder setup parameters are programmed from one menu page. (Currently, availability is limited for use with the *iQ* HMI or PCs with touch screen, such as tablets.)
- **Ethernet connectivity** - For connection to local area network or stand-alone applications.
- **Control** - Control feature for locking out system controls that complies with FDA 21 CFR Part II.
- **Remote connectivity** - Dukane hotline is available for system diagnostics and troubleshooting 24-hours a day. (VPN access to the welder's network is required. Consult with your IT staff about availability.)
- **One screen operations page** - Most recent weld cycle and graph data with ability to modify commonly used process settings.
- **F1 Help command** - Instantly displays explanation of function.
- ***iQ Explorer II User Interface*** - It is a peripheral device. Operation is independent of the generator, and removal or malfunction of the *iQ Explorer II* does not affect machine functionality.
- **Eight user-selectable graph parameters** - Velocity, energy, power, distance, amplitude, frequency, force and pressure for viewing and storage of each weld.

- **Production analysis screen** - Displays eight-hour shift production statistics: good, bad, suspect quantities and percentages.
- **Advanced stack diagnostics** - Includes power and frequency graphs for stack (horn) documentation and future reference for troubleshooting.
- **Tool identification** - Uses barcode system to identify tooling.
- **Work cell** - A Dukane Lean Work Cell can be integrated with basic PLC managed operations.

SECTION 2

System Requirements

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Computer Requirements

iQ Explorer II software requires the minimum computer hardware configuration mentioned below.

Processor

An IBM-compatible computer - desktop or laptop is required. The processor must have a clock speed of at least 1.60 GHz to operate. A faster processor with a more advanced architecture will provide improved performance.

Memory

At least 2GB of RAM are required. Less memory will result in an unacceptable performance penalty. 4GB of memory or more will enhance the system response.

Video Display

A color display with at least 800 x 600 resolution and 256 colors (8-bit) is required (SVGA). Higher resolution and/or more colors will improve display characteristics. To determine your settings, click on the **Start** menu, as shown in Figure 2-1. Then select **Control Panel** as shown.

Your system may be capable of higher resolution and/or more colors. You may increase these settings to your preference. When you are finished, click the **OK** button, and then close the **Control Panel** window.

TIP –

The minimum requirements are not the same as the suggested configuration (1.60 GHz processor with 2G of RAM).

Just as we have a Minimum Daily Requirement of vitamins and calories, no one tries to live on 600 calories per day.

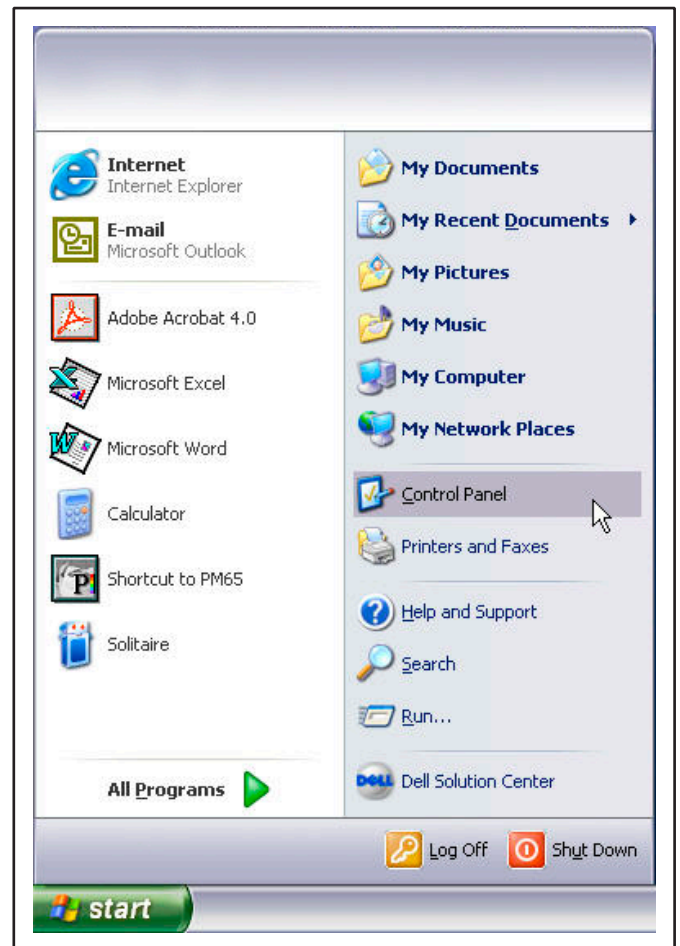


Figure 2-1 Select Control Panel from the Start Menu (Windows XP)

Continued

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In the Control Panel window, double-click the **Display** icon. See Figure 2-2 below.

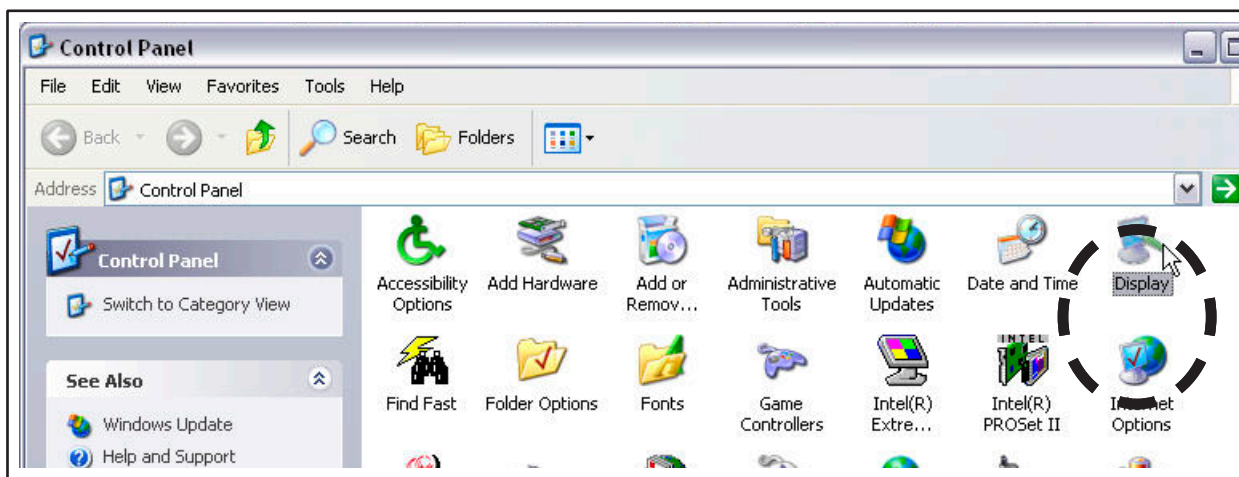


Figure 2-2 Select Display from the Control Panel Window (Windows XP)

A new popup window appears showing your current display properties. Click the **Settings** tab to view your current settings. Use the slider in the lower left corner of the window to adjust the display to at least 800 x 600. The drop-down menu in the lower right indicates the current color palette. Select at least 256 colors (8-bit). See Figure 2-3 to the right.

Your system may be capable of higher resolution and/or more colors. You may increase these settings to your preference. When you are finished, click the OK button and then close the Control Panel window.

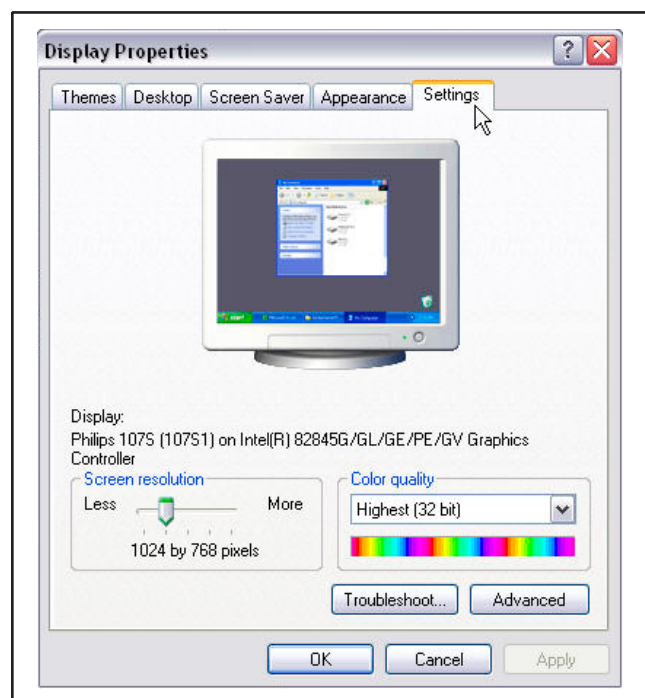


Figure 2-3 Setting Display Colors and Resolution (Windows XP)

Continued

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CD-ROM Drive

A CD-ROM drive is required to install the *iQ Explorer II* software.

Hard Disk Space

The *iQ Explorer II* software requires approximately 22MB of hard disk space for installation.

Communication Ports

USB Port

At least 1 USB port is required for the *iQ Explorer II* installation. The port will be used by the security key.

Ethernet Port

An Ethernet port is required for the *iQ Explorer II* installation.

Security Key

A USB security key is required. The driver for the key is installed when the *iQ Explorer II* program installs on your computer.

Please refer to *Section 3, Installation*, Page 17 for more information.

Continued

Software Requirements

iQ Explorer II software is only compatible with the Microsoft Windows operating system.

Windows®

The computer operating system (OS) must be Microsoft 32 or 64 bit versions of: Windows XP, Windows Vista, or Windows 7. To determine which version of Windows you have, select My Computer in the Windows Start menu as shown in Figure 2-4.

Windows XP

Select View System Information as shown in Figure 2-5 below.

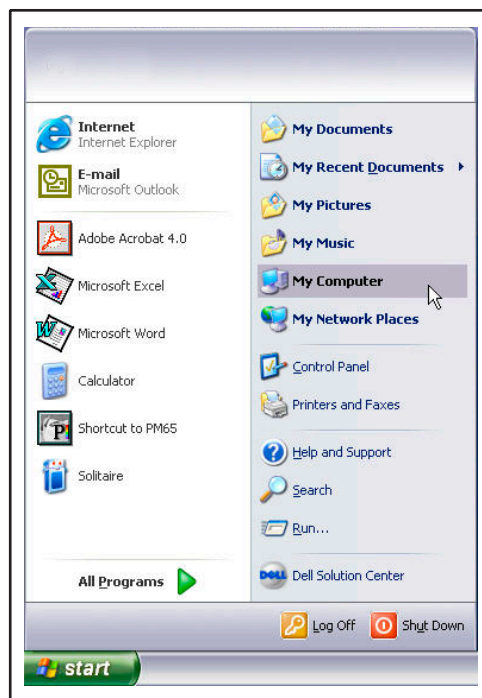


Figure 2-4 Selecting My Computer (Windows XP)

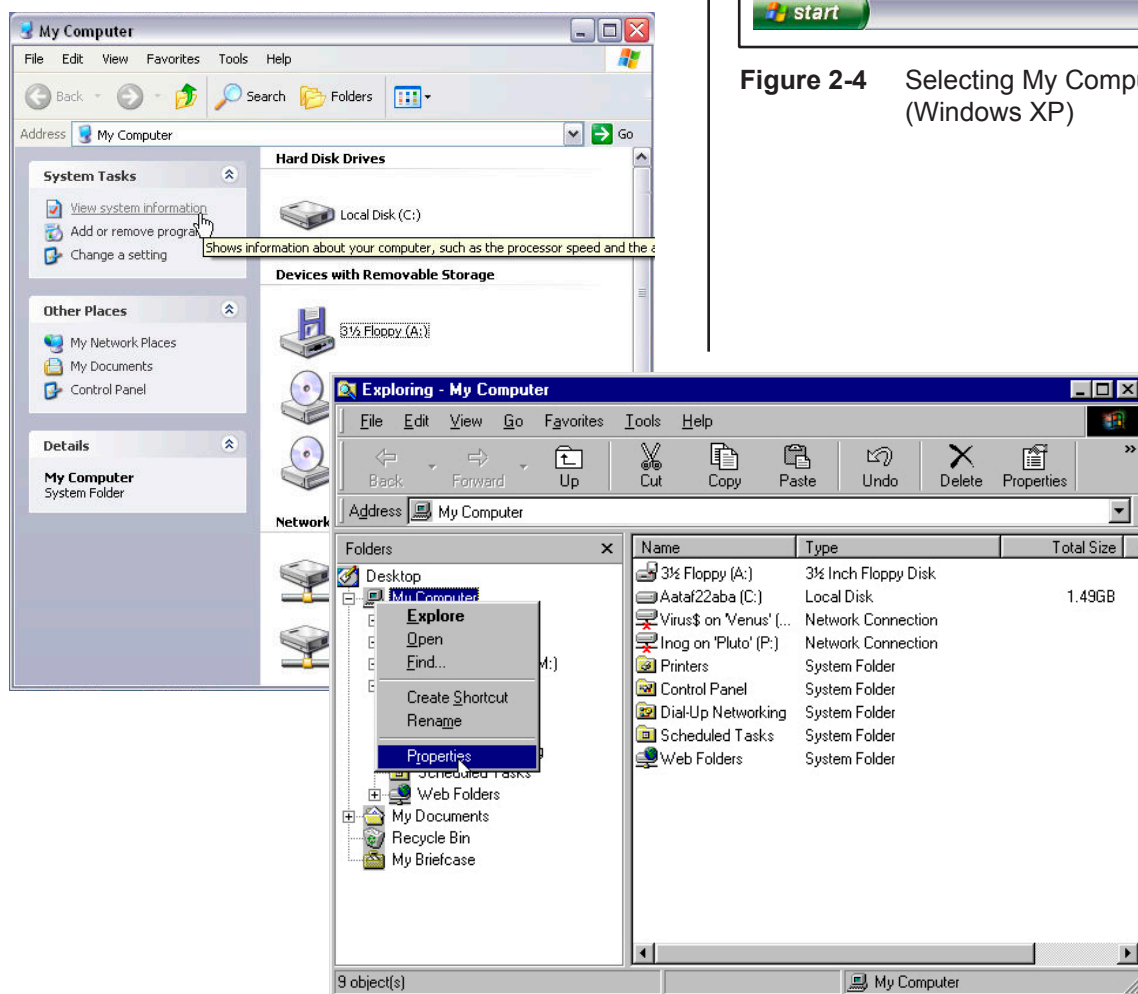


Figure 2-5 Selecting View System Information (Windows XP)

Continued

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After selecting **View System Information** a new popup window will appear (See Figure 2-6) showing:

- A** - Version of Windows™ currently installed,
- B** - Type of processor used, and
- C** - Amount of memory installed.

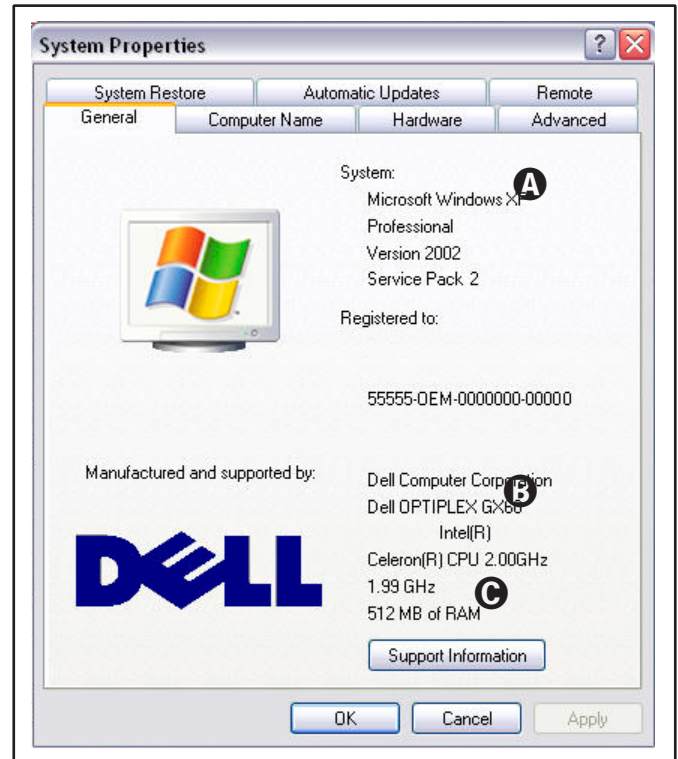


Figure 2-6 Checking Operating System Version (Windows XP)

Continued

Continued from Previous Page

Windows 7

The four-step process outlined here is a quick guide to viewing system information when using the Windows 7 operating system.

1. Select **Computer** as shown in Figure 2-7 below.

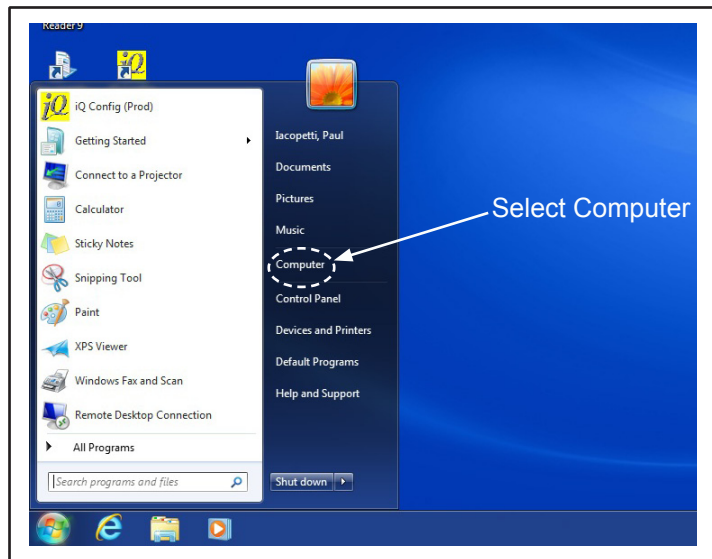


Figure 2-7 Start Menu, Select Computer (Windows 7)

2. The **Computer** window appears. An example is shown in Figure 2-8 below.

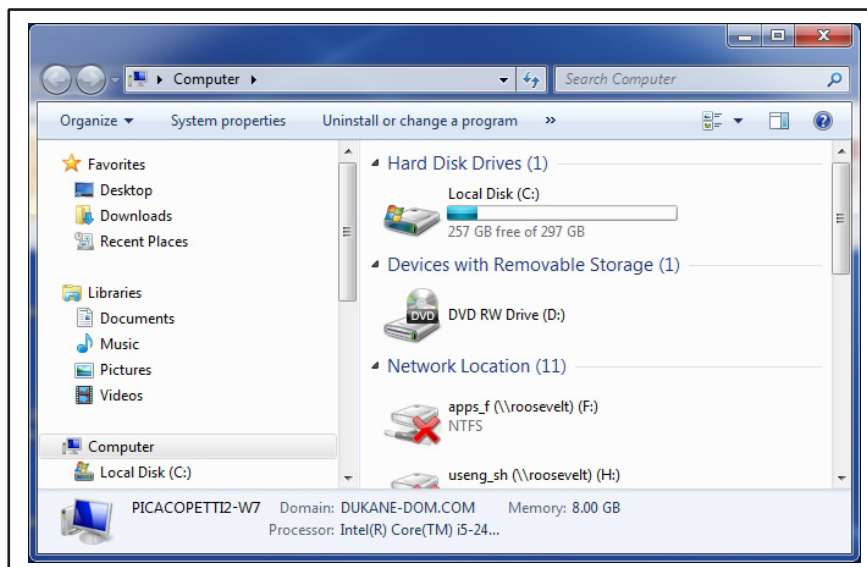


Figure 2-8 Computer Window (Windows 7)

Continued

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- With the Computer window open, right click to display the Computer submenu as shown below in Figure 2-9.

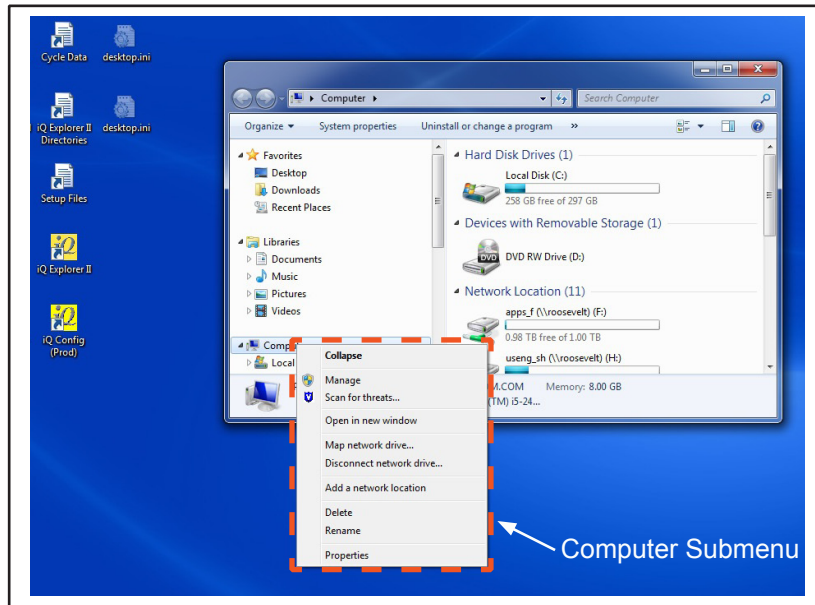


Figure 2-9 Computer, Right Click Displays Submenu (Windows 7)

- From the Computer submenu, click on Properties to view computer details about your computer. A sample view is shown below in Figure 2-10.

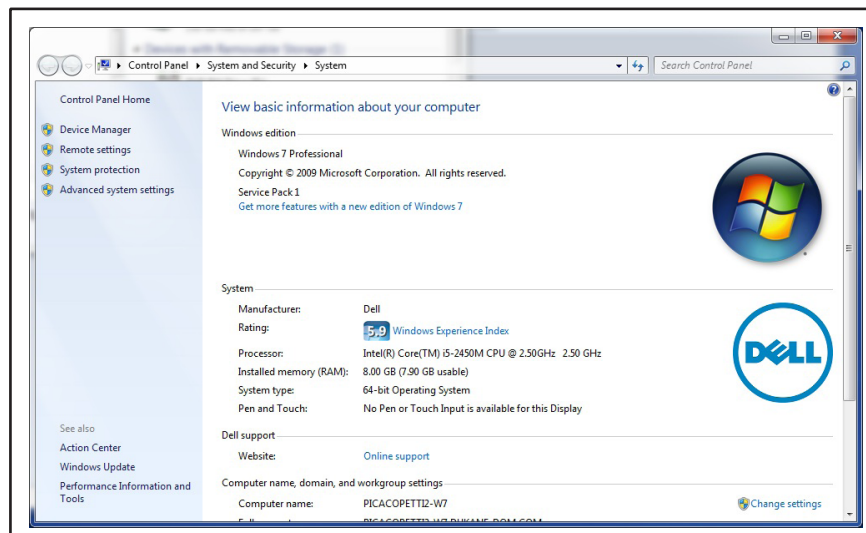


Figure 2-10 Properties - Hardware and Software Details (Windows 7)

Continued

.NET Framework

Microsoft .NET Framework 2.0 is required for running *iQ Explorer II*. It is built into the Windows Vista and Windows 7 operating systems.

***iQ* System Requirements**

iQ Explorer II is designed to compliment the *iQ Series* generators - the advanced models only. The software allows the operator to program these generators more easily and in less time than if programmed manually.

If there is any question about your generator type or its compatibility with *iQ Explorer II*, please contact Dukane.

SECTION 3

Installation

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Unpacking

Carefully open your shipping container, and make sure it contains the items shown on the shipping documents. Inspect all items, and report any missing items or damage immediately.

iQ Explorer II Kit (Dukane Part No. 438-987)
Contents:

Item	Dukane Part No.
CD	437-00255
Security Key	433-38
Ethernet Patch Cable	200-1552-03M
User's Manual	403-585

Installing

(Microsoft Windows Operating System Only)

1. Place the CD in the PC's CD-ROM drive tray, and close the tray.
2. The CD should start the installation process automatically.

(If this does not happen, go to **START**, then **RUN** and key in this command:

d:\setup.exe [Where d: is your CD-ROM drive])

3. The **iQ Explorer II** installation window will appear. Follow the on-screen instructions to complete the installation, and remove the CD from the CD-ROM drive tray when finished.

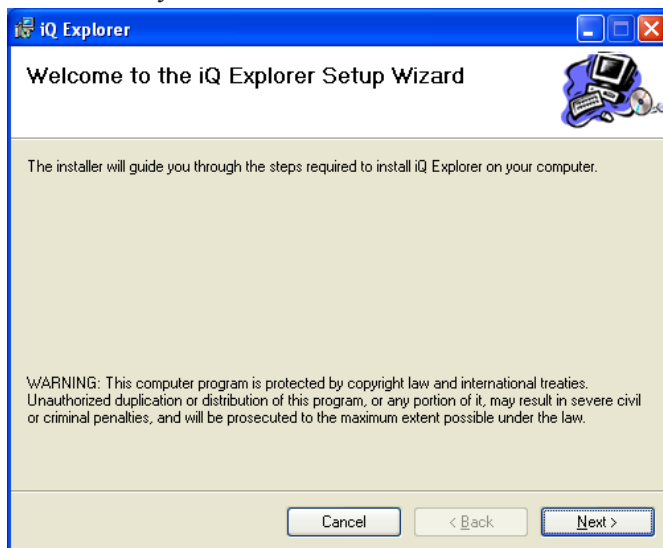


Figure 3-1 Installation Start-up Screen

4. Insert the USB Security Key (Part No. 433-38) into any available USB port on the computer. (*This Security Key is also referred to as a dongle.*)

A Found New Hardware Wizard window will appear.

The Wizard detects a new USB device and searches for the appropriate software. When the Wizard completes its search a message will appear:

*The wizard has finished installing the software for:
USB Dongle - Software Protection Device*

If you are prompted to search Windows Update for the driver, select **NO**, not this time, and click **Next**.

NOTE

Without the USB security key **iQ Explorer II** will run for only a few minutes. The time and date bar at the bottom of the window flashes red if the key is not installed.

5. Select **Install the Software Automatically** (Recommended) and click **Next**.
6. Click **Finish** to end the Found New Hardware Wizard.

NOTE

The software checks to see if Microsoft .NET Framework is installed. If it is not, put the **iQ Explorer II** CD back into the CD-ROM drive tray, and close it.

Go to **START**, then **RUN** and key in:

d:\NetFx20SP1_x86.exe

[Where d: is your CD-ROM drive] to install the .NET Framework.

After .NET Framework is installed, restart the computer, and complete the **iQ Explorer II** installation.

Continued

Generator Connection

Power up the generator, and connect it to the PC with an ethernet cable, if not already powered and connected.

Launching the Software

The program can be launched in several ways: by using the Autoboot feature of your computer, or by clicking on the program's desktop icon.

Autoboot

Add the programs's shortcut to the startup directory so that **iQ Explorer II** will autoboot (automatically begin) after the PC has been started. Figure 3-2 illustrates how the screen will look on start-up.

The NOTE to the right lists steps to make a shortcut.

Click Icon

You may prefer to launch **iQ Explorer II** by double clicking its desktop icon.



NOTE

To change the autoboot feature, you may add this program to your computer's start-up sequence using these steps:

1. Click on the Start button.
2. Click on All Programs.
3. Right click on the Startup file folder.
4. Go to Open.
5. Click on the File menu, and New, and then Shortcut.
6. Next, locate the execute file for **iQ Explorer II**. Click on My Computer, then on Local Disk (C:), then go to Program Files, then to Dukane, then to **iQ Explorer II**, and finally click on **iQ Explorer II.exe**. Click on Add, and the shortcut has been created.

In some cases a Wizard may also act as a guide for the process just described.



Figure 3-2 iQ Explorer II Start-up Screen

Continued

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***iQ Explorer II* Connects with Generator**

1. At first connection, ***iQ Explorer II*** and the ***iQ*** ES generator connect immediately using their default network configurations.
2. When connection has been made, the welder(s) available to the software are shown when the user presses the **Show Welders** button on the toolbar on the left of the application. See Figure 3-3 to the right.
3. An example list of available welders is shown in Figure 3-4 to the right. Notice that the button has changed to **Hide Welders**.

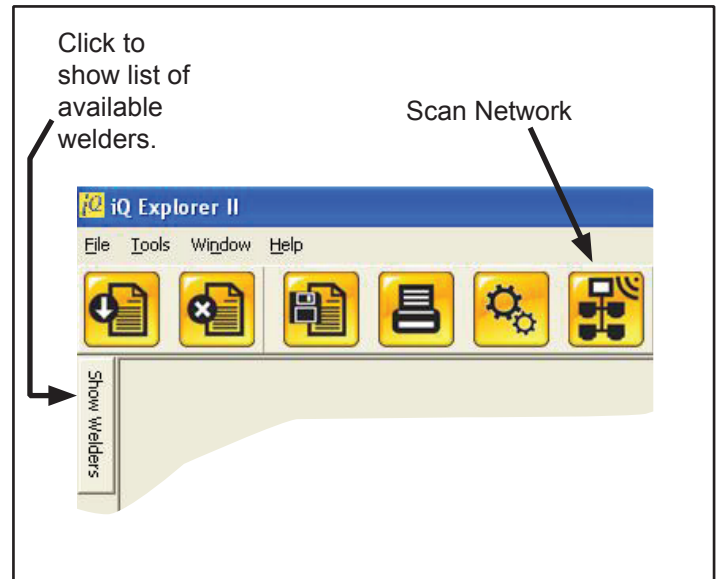


Figure 3-3 Show Welders - 1

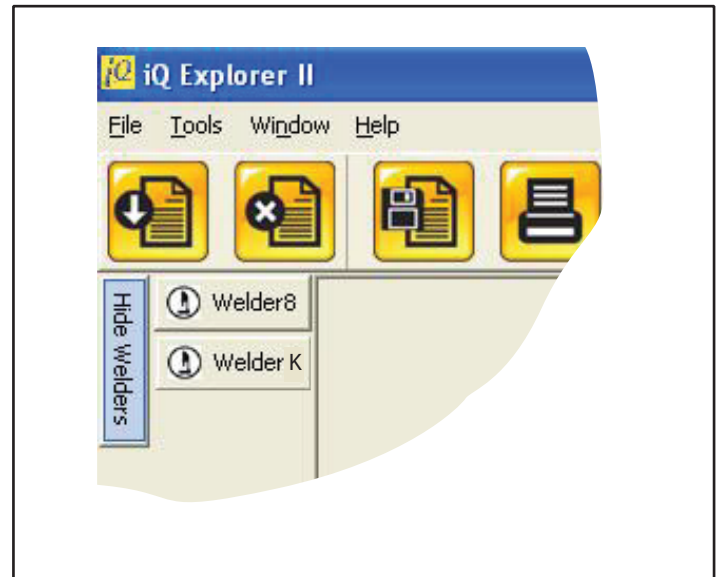


Figure 3-4 Show Welders - 2

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SECTION 4

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Main Menu

This section gives an overview of the top of screen menu bar and the submenus that flow from it.

File

See Figure 4-1 to the right for the File menu. File submenu items are detailed below.

Select Active Setup

A pop-up window displays the list of setups currently loaded in the welder. The user can select a different active setup in the welder.

Open Cycle Data

A pop-up window displays the current month's list of stored cycle data files. This pop-up window can be used to navigate to a directory other than the one defined in the Options. The user can select a file and load the contents into a separate window of *iQ Explorer II*.

Open Graph Data

A pop-up window displays the current month's list of stored graph data files. This pop-up window can be used to navigate to a directory other than the one defined in the Options. The user can select a file and load the contents into a separate window of *iQ Explorer II*.

Open Setup from Disk

A pop-up window displays the list of stored setup files. This pop-up window can be used to navigate to a directory other than the one defined in the Options. The user can select a file and load the contents into a separate window of *iQ Explorer II*.

Load Setup from Disk

A pop-up window displays the list of stored setup files. This pop-up window can be used to navigate to a directory other than the one defined in the Options. The user can select a file and load the contents into the CURRENTLY SELECTED SLOT of the welder.

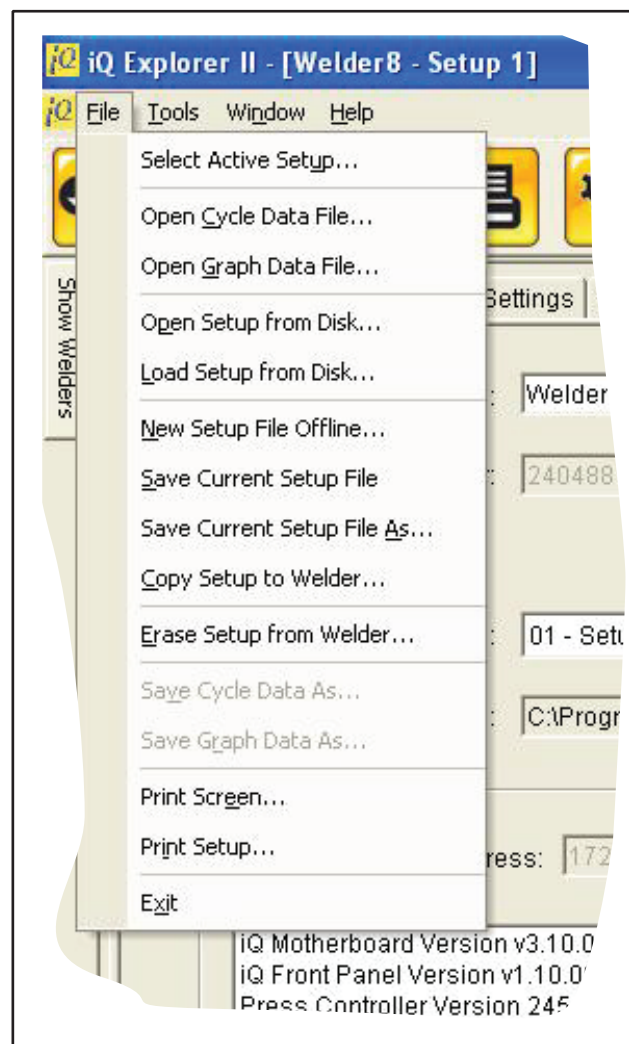


Figure 4-1 Main Menu - File

Continued

New Setup File Offline

A pop-up window displays the list of welder types that can be the target of the new setup. Make the selection and press OK. A blank setup for the welder will be displayed in a separate window of *iQ Explorer II*.

Save Current Setup File

Select this action to save the currently active setup to a file on the PC with the existing setup name. If the file already exists, it will prompt you to overwrite it.

Save Current Setup File As

A pop-up window displays the list of stored setup files on the PC. This pop-up window can be used to navigate to a directory other than the one defined in the Options. The user can change the name of the setup when saving to file. If the name of the file is changed, the corresponding name of the setup, stored in the file itself, is changed to match the filename.

Copy Setup to Welder

A small pop-up window displays the list of slots in order to have the user select the target slot on the welder to copy the currently active setup.

Erase Setup From Welder

Select this action to erase the currently active setup file from the welder.

Delete Setup File from Disk

A pop-up window displays the list of stored setup files. This pop-up window can be used to navigate to a directory other than the one defined in the Options. The user can select a file and delete it from the PC.

Save Cycle Data As

A pop-up window displays the list of cycle data files on the PC. This pop-up window can be used to navigate to a directory other than the one defined in the Options. The user can change the name of the cycle data file when saving it.

Save Graph Data As

A pop-up window displays the list of graph data files on the PC. This pop-up window can be used to navigate to a directory other than the one defined in the Options. The user can change the name of the graph data file when saving it.

Print Screen

Select this action to make copy of the screen. The user can save this image to file or immediately print it to a connected printer.

Print Graph Data

Select this action to print the current graph data to a connected printer. This option is available from the Graph Data tab, when there is available data.

Print Cycle Data

Select this action to print the current cycle data to a connected printer. This option is available from the Cycle Data tab, when there is available data.

Print Setup

Select this action to populate a report with the current setup on display. The user can save this image to file or immediately print it to a connected printer.

Exit

Select this action to exit *iQ Explorer II*.

Continued

Continued from Previous Page

Tools

See Figure 4-2 to the right for the Tools menu. Tools submenu items are detailed below.

Options

See Figure 4-3 to the right. This is the window that appears after Options has been activated.

Communications

This group contains features related to how *iQ Explorer II* connects to *iQ* generators on the network.

Security

This option contains the features used to enable access limitations to *iQ Explorer II* and any connected *iQ* generators.

PLC Interface

Enabling this feature allows the user to configure a machine interface screen related to controls associated with a Dukane Lean Work Cell.

This feature works in conjunction with Security settings.

Shifts

This option affects cycle data in the context of shifts rather than at end of day.

Graph Data

This group contains features related to graph data management.

Cycle Data

This group has features related to cycle data management.

Setup

This option contains features related to the storage of setup files.

Barcode

Enabling this feature will have one to three barcode scans select a setup. Enabling this feature prevents the use of the welder unless *iQ Explorer II* is connected as well.

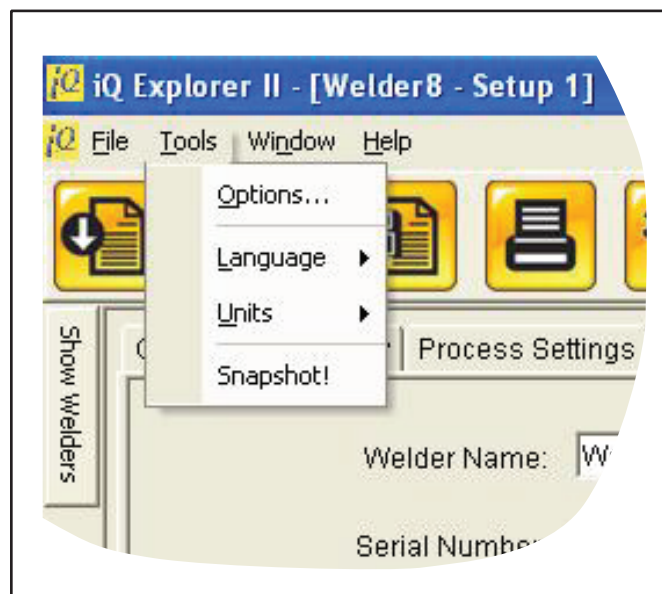


Figure 4-2 Main Menu - Tools

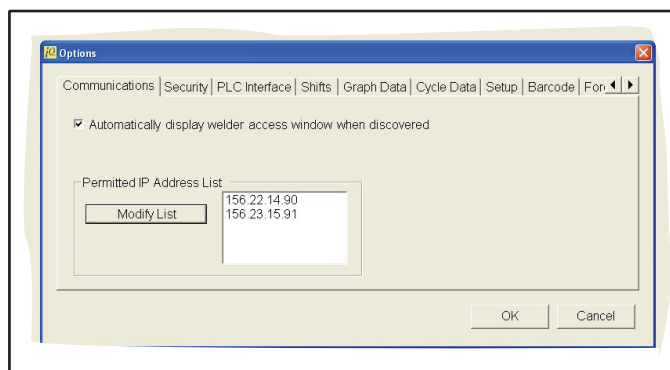


Figure 4-3 Main Menu - Tools > Options Window

NOTE

More Options Information:
Use the *iQ Explorer II* Help file, and refer to the OPTIONS material starting on Page 32 of this User's Manual.

Continued

Continued from Previous Page

Force

This feature provides an enhancement to display air pressure settings in units of force.

Appearance

With this feature, the PC display image can be enhanced when *iQ Explorer II* is running. Among other things a background image and a watermark for reports can be set.

Diagnostics

This option enables the ability to save messages to and from the welders.

Language

This menu displays the list of available languages supported by *iQ Explorer II*. All *iQ Explorer II* displays will be converted to the language selected.

Units

Imperial

Select this and it converts all contents in all windows to show Imperial units. This does not have an effect on how units are displayed in any generator.

Metric

Select this and it converts all contents in all windows to show Metric units. This does not have an effect on how units are displayed in any generator.

Snapshot!

Select this menu item to start the process that compresses a copy of the *iQ Explorer II* environment into a zip file and places it on the Windows desktop. The zip file contains version information, the current setup, recent cycle and graph data, alarm history and basic configuration information. The Dukane Service Department may ask for a Snapshot while troubleshooting your system.

Continued

Continued from Previous Page

Window

Select this menu to rearrange window interfaces.

See Figure 4-4 to the right for the Window menu.

Help

See Figure 4-5 to the right for the Help menu. Help submenu items are detailed below

Help

Select this menu item to open the help file to assist you on how to use weld parameters and more details on features of *iQ Explorer II*.

About *iQ Explorer II*

iQ Explorer II version information is available here.

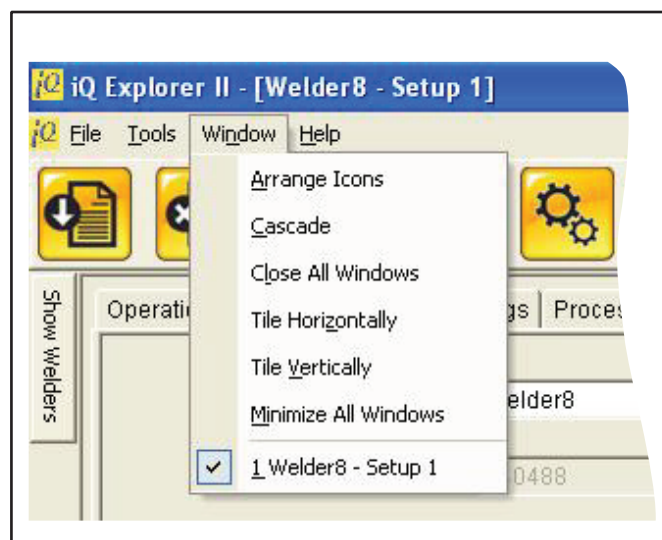


Figure 4-4 Main Menu - Window

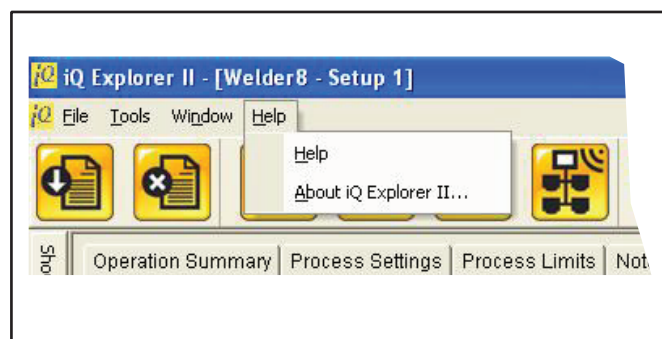


Figure 4-5 Main Menu - Help

Main Screen Icons

The icon bar just below the main menu allows easy access to frequently used features. In the pages that follow you will get an overview of their usefulness.

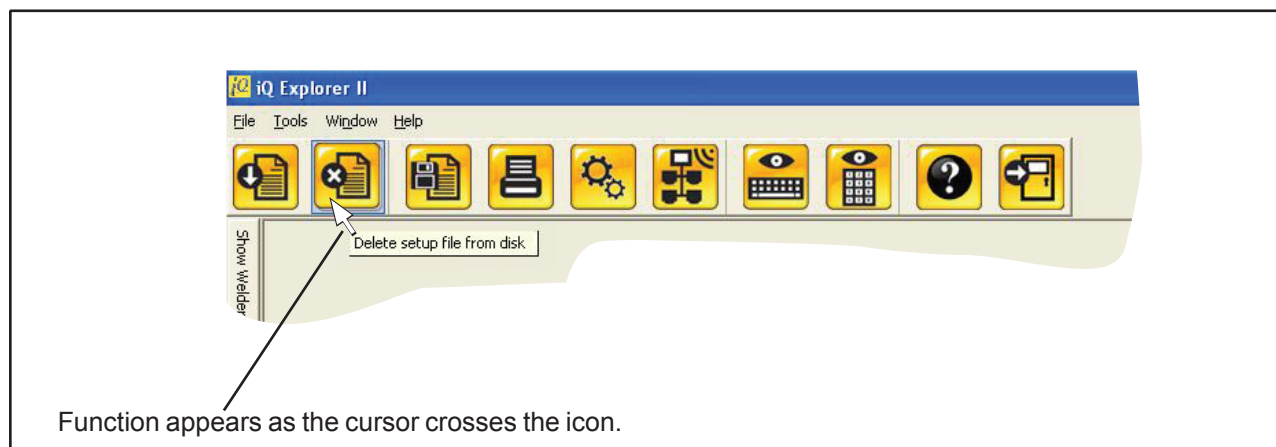


Figure 4-6 Main Screen Icons

Continued

Continued from Previous Page

Icon Detail

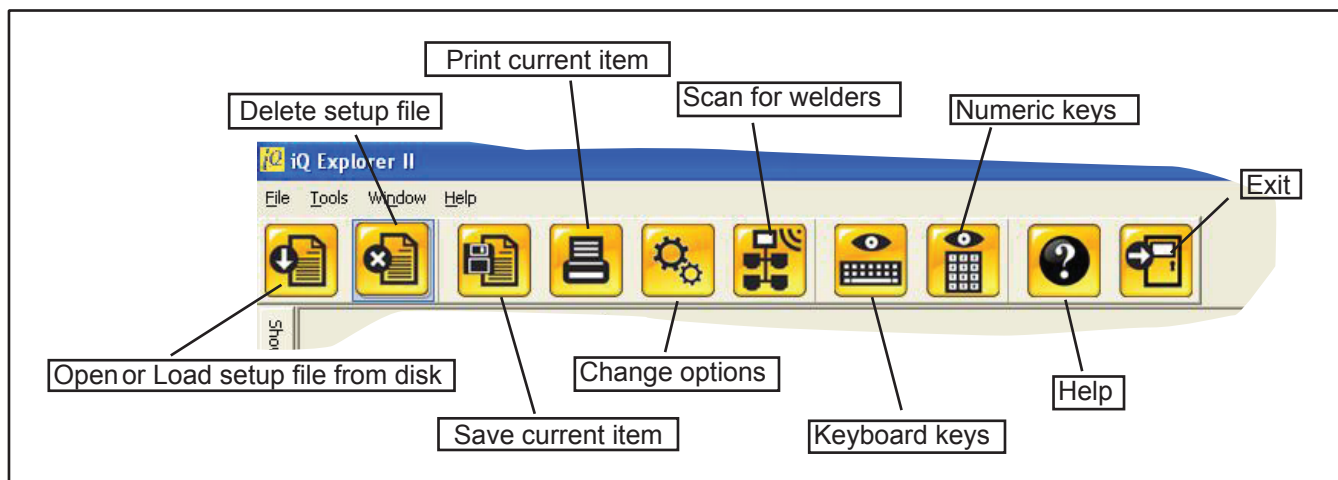


Figure 4-7 Icon and Function

- **Open or Load setup file from disk** - Opens an existing setup file, or loads a setup file from disk. If the topmost window shows the interface of a connected welder, then pressing this button will load a setup from file into the currently selected slot of the welder.
If the topmost window shows any other interface, or no interface, then pressing this button will open a setup file into its own interface as an offline setup.
- **Delete setup file** - Deletes an existing setup file. If the topmost window shows the interface of a connected welder, then pressing this button will delete the setup from the currently selected slot of the welder.
If the topmost window shows any other interface, or no interface, then pressing this button will delete a setup file from disk.
- **Save current item** - Save data frequently. Pressing this button will save the contents of what is currently on screen to file. If the user is viewing cycle data, pressing this button will save cycle data to file. If the user is viewing graph data, pressing this button will save the graph to file. If the user is viewing process settings, pressing this button will save the setup to file.

Continued

Continued from Previous Page

- **Print current item** - Print screen data.
Pressing this button will print the contents of what the user sees on screen. If the user is viewing cycle data, pressing this button will print cycle data in a table format. If the user is viewing graph data, pressing this button will print only the graph. If the user is viewing any interface that contains setup parameters, pressing this button will process the setup into a report and print it. If the user is viewing any other interface, pressing this button will print a complete screen shot.
- **Change options** - Make settings to enhance how the PC manages the welding process.
- **Scan for welders** - See which welders are active in the network.
- **Keyboard keys** - (*When no regular keyboard is available.*) A simulated keyboard appears. Use the mouse to position the cursor on the key you want. Click to select. Letters appear in the preview panel. Click ENTER to place the text in the chosen entry box of the active window.
- **Numeric keys** - (*For use when no regular keypad is available.*) A simulated keypad appears. Use the mouse to position the cursor on the key you want. Click to select. Numbers appear in the preview panel. Click ENTER to place the numbers in the chosen entry box of the active window.
- **Help** - Open an extensive help file
- **Exit** - Shuts down the *iQ Explorer II* application.

Making an Entry Keyboard and Mouse

1. Use the mouse to place the cursor in a white entry box and click. This activates a flashing vertical bar and the box itself to confirm your selection.
2. Type in the changes, and press the ENTER key.
3. If the user requires help with a specific setting, press the F1 key while the box is flashing.

Touch Screen

1. Touch the box in which the user would like to make changes.
2. Press either the numeric keypad or the keyboard icons on the toolbar to use in making the changes. Double touching any box in *iQ Explorer II* will also bring up either the numeric keypad or the keyboard.
3. Tap the ENTER key on either the numeric keypad or the keyboard to apply the entry.

NOTE

Entry box prompts: There may be a flashing vertical bar, or the entire entry box might be filled with a flashing color.

Continued

Options

This feature helps you manage the welding process with the settings offered through the options listed below:

- Communications
- Security
- PLC Interface
- Shifts
- Force
 - Graph Data
 - Cycle Data
 - Setup
 - Appearance, and
 - Diagnostics

Table 4-I on the next page gives an overview of each option. The pages that follow the table explain these options in more detail.

NOTE

The Help file of *iQ Explorer II* is a good source of information for reviewing the purpose of particular features.

Continued

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Option		What the Operator Can Do with the Option		
		Turn Feature On or Off	Enter Data	Make a Selection
Communications		Automatically display welder access window when discovered.	IP Address List - Enter permitted IP addresses.	
Security ¹		- Enable security. - Enable auto log off timeout. - Enable auditing to support FDA 21 CFR Part 11. - Default response to yield access rights. - Show keyboard on password entry.	- Add users with access passwords. - Directory to store FDA 21 CFR Part 11 audit file.	
PLC Interface		- Enable interface to Dukane Lean Work Cell. - Disable outputs to operators. - At startup navigate directly to machine interface. - Prevent unspecified user to log on as operator.	Configure PLCs.	
Shifts		Enable saving Cycle Data in shifts.	Name the shift and enter times.	Enable shift(s).
Graph Data	Files	Automatically save graph data to file.*	Directories to save graph data to file.*	
	Display	- Show graph in cycle data screen - Show graph data types: Distance, Velocity, Power, Energy, etc.		
Cycle Data	Files	- Save cycle data from multiple welders to one file. - Directories to save cycle data.		
	Other	- Display only most recently welded cycle data. - Limit the file size of SML cycle data files. - Limit the number of cycle data to a single file.	- Interval - Save cycle data (minutes) to file.* - Directories to save cycle data to file.*	
Setup			Save setup file directory	
Barcode		Enable barcode scan	- Select serial port - Enter barcode specs.	
Force		Enter Force instead of Pressure.		Select air cylinder bore size.
Appearance			Locations for: Default Setup Image, Background Image, and Report Watermark.	
Diagnostics		Enable message log to/from welders.	Location for saved messages to/from welders.	

Table 4-I Options Choices for the Operator

***NOTE**

Data is saved to the PC's hard drive.

¹ NOTE

Password protection prevents editing. It limits those without proper access permission from making unauthorized changes to the weld process or to *iQ Explorer II* options.

Communications

This option relates to how *iQ Explorer II* connects to *iQ* generators on the network. See Figure 4-8 for a view of this tab.

Auto-Display Welder Contents **A**

Enable this feature to always display the user interface immediately following the detection of the welder. This is best used when *iQ Explorer II* is directly connected to a single generator.

Permitted IP Addresses **B**

Add IP addresses of *iQ* generators to this list to limit the *iQ Explorer II* interface to only those on the permitted list. This is best used when many *iQ* generators are present on a single network and *iQ Explorer II* is dedicated to a subset of the generators on that network.

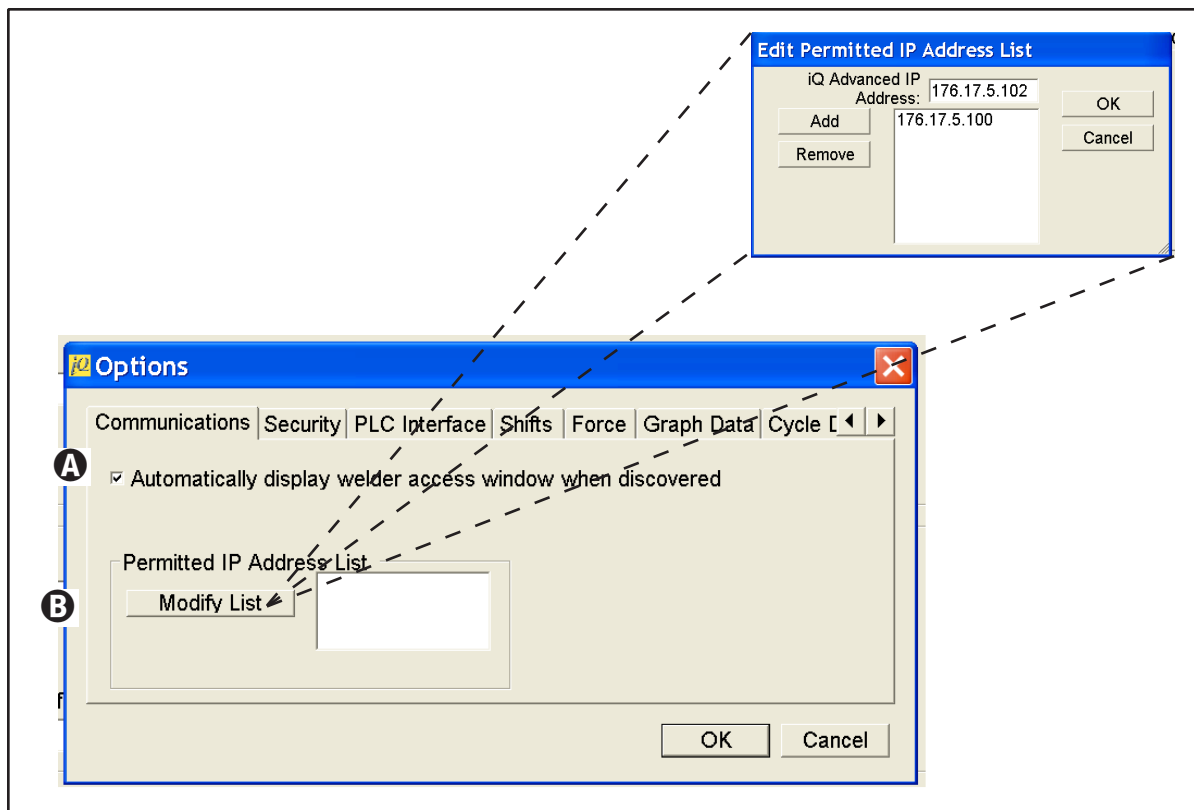


Figure 4-8 Options - Communications Tab

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Security Overview

Introduction

For Dukane *iQ* ES generator models and *iQ Explorer II*, security refers to more than standard password protection. Security includes protection from multiple users modifying the same set of parameters, simultaneously.

This section explains how *iQ Explorer II* influences access to parameter settings, as well as explaining its various password protection features.

No Password Protection

The factory settings of the ES generator include disabled password protection. The user can modify any parameter available on any of the generator's screens.

When *iQ Explorer II* first makes a network connection to the generator, it is in a read only access level. At this stage, all of the parameters stored on the generator are uploaded to *iQ Explorer II*.

1. To open the user interface on *iQ Explorer II*, click the button associated with the welder. Since the user interface at the generator has initial access rights, *iQ Explorer II* needs confirmation before it is permitted to edit any parameters.
2. The user interface on the generator prompts the user, Yield control to remote user?
iQ Explorer II will display the status message, Welder is in use. Please wait while requesting access to welder.
If the user at the generator denies control, *iQ Explorer II* will display the parameter settings but will also remain in read only mode.
3. If the user at the generator permits the handoff of control, *iQ Explorer II* will display the parameter settings, and then the one who is using *iQ Explorer II* will be permitted to modify any parameter.
4. After yielding control, the user at the generator will not be permitted to access the parameter screens until that user reacquires access permission from the user at *iQ Explorer II*. The user at the generator may still view the Operator Screen, initiate tests and turn the system offline and online.

Continued

When the user at the generator requires parameter access, that person has to use the Security screen and press the **Request Control** button to reacquire access.

Timeout

When either user interface (at the generator, or with *iQ Explorer II*) is prompted, there is a chance that no one will be present to respond to the request to yield control. Both interfaces give the user fifteen seconds to respond to the request. After the fifteen seconds has elapsed, the decision to yield or not yield is defined by an option setting in the Security screen of the ES generator, and the Options|Security tab of *iQ Explorer II*. By default, the answer to the question is to deny the access to the remote user.

Stand-alone Password Protection on the iQ ES Generator

User Access

There are four access levels; three require passwords. When the user specifies a password for any of these levels, the user is required to enter that password to modify a subset of parameters. Please see the generator User's Manual for further information on the levels of password protection that are available.

***iQ Explorer II* and Generator Password Protection**

Once a password at any level has been defined on the *iQ* ES generator, the password defined at the highest level is used as a lockout for any *iQ Explorer II* connection that may be on the network.

When an *iQ Explorer II* connection is attempted, the user at *iQ Explorer II* is required to enter the highest level password to gain access to the generator, even as a read only connection. Once the user enters the proper password, *iQ Explorer II* retains the password for that specific welder and uses it every time it needs to establish a connection to the welder.

For instance, this will allow *iQ Explorer II* to connect to that generator indefinitely, or until new passwords are assigned at the generator.

Continued

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Using the Security Tab

The Security option tab is shown in the figure below.

Yield Access - A *iQ Explorer II* and the *iQ* generator are restricted from changing settings at the same time. The user has to request access from the user interface that is currently in control. This option determines whether access is yielded by default. The timeout for the default response is thirty seconds.

Enable User Level Access - B Enable user level access to force a login to access *iQ Explorer II*.

See Figure 4-9 below.

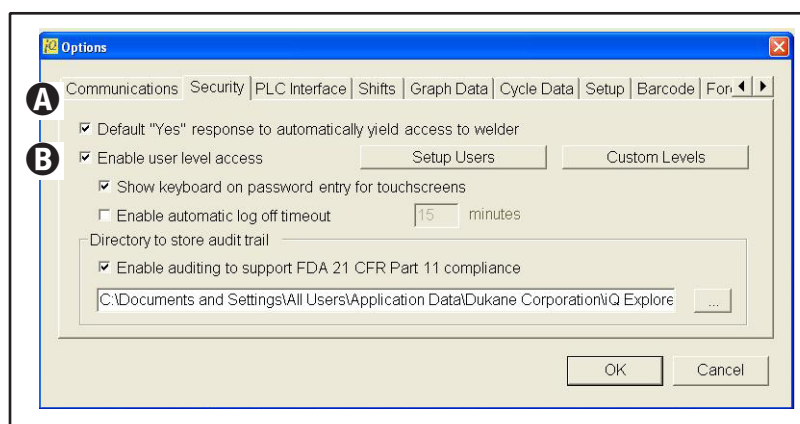


Figure 4-9 Options - Security Tab

When this feature is enabled, the user becomes an Administrator. A pop-up window appears to enable an administrator level password as shown in the example to the right in Figure 4-10.

The user needs to enter an administrator display name, user name and password. This is illustrated in Figure 4-11: **C**

This will open up more security related features.

An Administrator level user can modify any features in the Options popup, including adding users. The following levels of user are available: administrator, process engineer, setups, operator and two user-defined custom levels. More explanation about these levels is given on the next page.

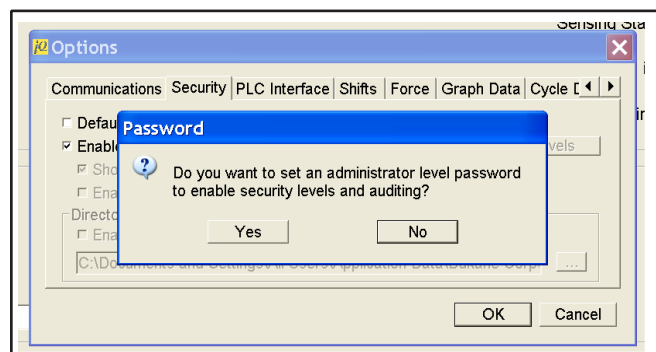


Figure 4-10 Options - Enable Administrator Password

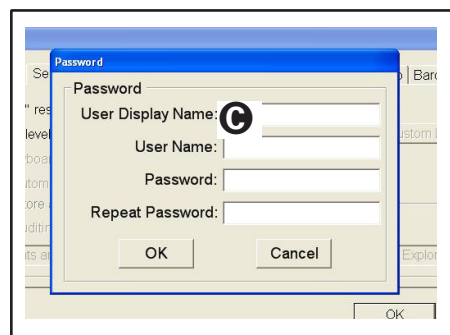


Figure 4-11 Options - Set Password

Continued

User Access Levels

There are six access levels on *iQ Explorer II*, and ALL of them require passwords.

The list of access levels is as follows:

Administrator

This level permits access to all parameters and features available in *iQ Explorer II*

Process Engineer

This level permits access to all setup parameters and setup files.

This level prevents changing language, units and the Options settings, as well as limiting write access to parameters in the System tab.

Setups

This level permits access to changing or loading setups, but excludes write access of any parameter setting, individually.

This level also prevents changing language, units and the Options settings.

Custom 1, Custom 2

These levels are the same as the Setups level, but may be customized by the user to include a subset of parameters for this user to modify. The user may define a unique name to each of these access levels.

The groups of parameter settings that can be included in the list of allowable parameters are:

Amplitude; Trigger; Pressure;
Weld; Hold; and Reset Part Count.

Operator

This access level prevents write access to all parameters, and prevents access to any action in the file menu or tool bar.

TIP

If no user is logged in to the generator and passwords have been defined, then the access level is Operator. Operator is a read only interface.

When *iQ Explorer II* connects to an ES generator that currently has only Operator access, *iQ Explorer II* will be granted immediate access. There will be no need to wait for an Operator at the ES generator to yield access. An Operator cannot decline access to edit parameters.

Continued

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Setup Users

The Administrator adds names and creates user profiles by first clicking on the **Setup Users** button as shown in Figure 4-12 to the right.

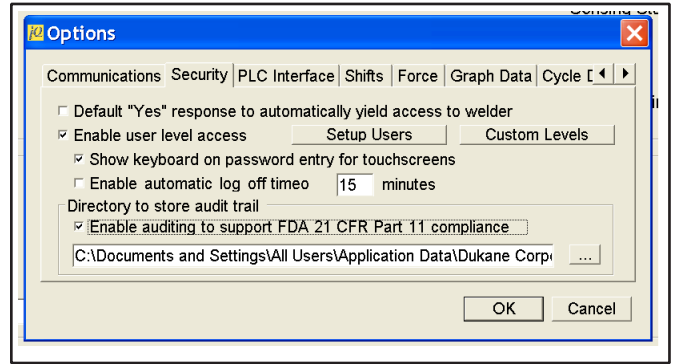


Figure 4-12 Options - Security - Setup Users

Adding Names

The Administrator's details appear in the Manage User Names pop-up window. Click on the **Add New** button as shown in Figure 4-13 to the right to add a user.

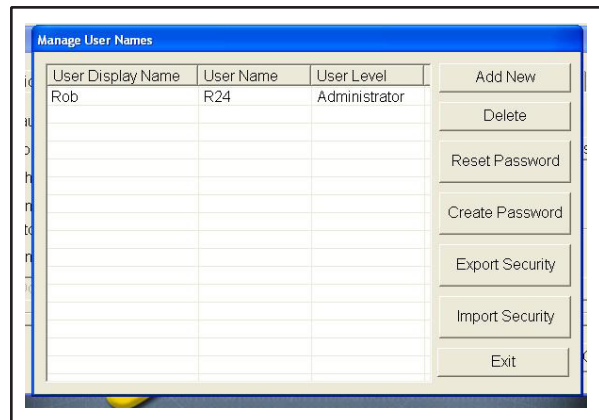


Figure 4-13 Options - Security - Add New User

Creating User Profiles

Figure 4-14 below shows that entries are made with the virtual keyboard: User Display Name, User Name, User Level

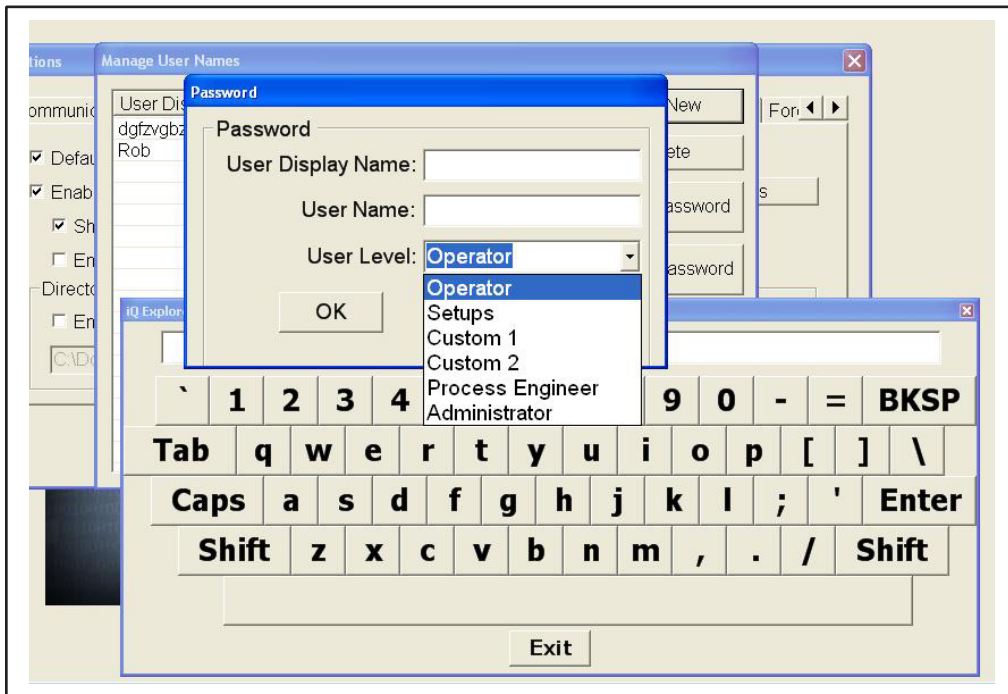


Figure 4-14 Options - Security - Create User Profiles

Continued

Creating Custom Level User Profiles

Figure 4-15 to the right appears after Custom Levels has been clicked on the Security tab. Two custom security profiles can be set up.

Use the Permit column for items the user can edit.

Use the Read Only column for things the user can only monitor/read.

Show Keyboard on Password Entry for Touch Screens

When enabled, the pop-up keyboard will automatically display when the password entry window is shown.

Double clicking on the edit controls will always pop up the keyboard, otherwise. This is handy if you have an HMI touch screen without a physical keyboard.

See Figure 4-16 to the right.

Enable Automatic Log Off Timeout

Another security option for the Administrator is the Automatic Log Off Timeout as see in Figure 4-16 to the right.

When enabled, this will automatically log off a user when no activity is detected after the amount of time set in the entry box has passed.

Enable Auditing to Support FDA 21 CFR Part 11 Compliance

In addition to standard password protection, *iQ Explorer II* offers a feature that complies with FDA 21 CFR Part 11.

To support Part 11, *iQ Explorer II* attaches a user ID to every cycle, alarm, setup modification and other events. *iQ Explorer II* has the option for the user to define a target directory to host the audit file(s) that track all events.

To ensure Part 11 compliance, no user is permitted to log into the *iQES* system since fully recording all modifications is not possible. Therefore, the user may not have password protection on the ES generator in conjunction with Part 11. Only operator access is permitted.

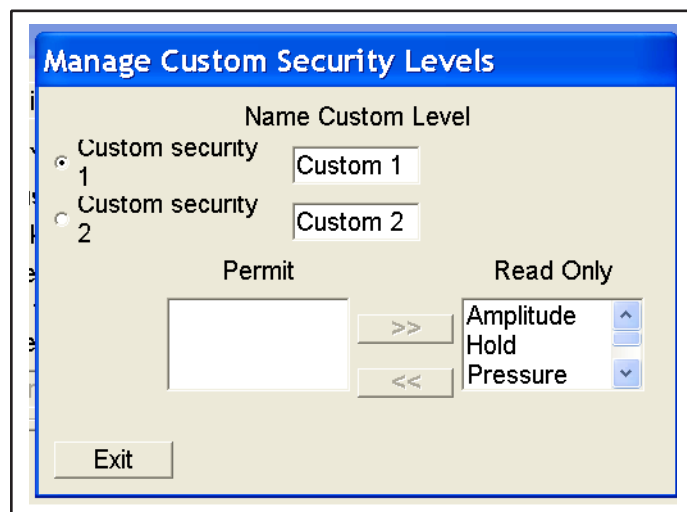


Figure 4-15 Options - Security - Custom Security Levels

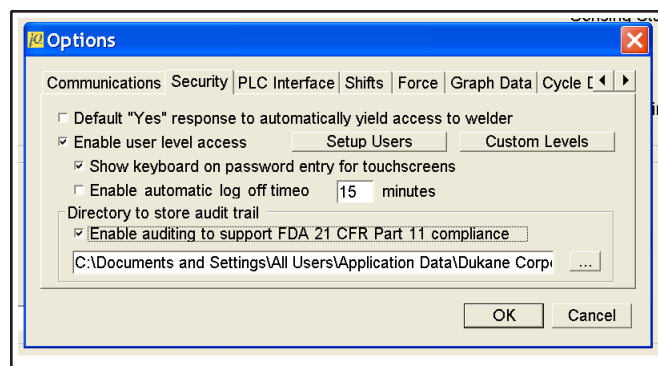


Figure 4-16 Options - Security Tab - Enable Auto Timeout and Enable Auditing

NOTE

An *iQ Explorer II* connection is required to execute a weld on an *iQES* generator with Part 11 active.

Continued

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Audit Trail

Introduction

When auditing is enabled in *iQ Explorer II*, all modifications to active setups on the *iQ* generator are tracked in a file and stored in a user-defined directory. All weld cycles and loading of active setups are tracked, as well.

This feature complies with the DFA 21CFR Part 11 standard.

(When referencing this standard, it will simply be referred to as: Part 11.)

Fundamental requirements for this standard are associating a user with every action that occurs at the welder.

Password Protection

Part 11 Requirements

Part 11 requirements regarding password protection include a user ID and a password. *iQ Explorer II* hides user IDs and passwords on the PC on which it runs.

There are no limits to the number of users that can be added to *iQ Explorer II*.

Exporting and Importing Users

Users may need to access multiple ES model *iQ* welders in a network. In addition, each of these welders may be controlled by their own copy of *iQ Explorer II* software. If this is the case, entering user information repeatedly could become tiresome and vulnerable to data entry mistakes.

In the Setup Users section of the Security tab in Options, *iQ Explorer II* provides Export Security and Import Security features. Export Security saves user information to an encrypted file with an extension of “iqu”. Import Security loads user information from such a file into a different PC.

With this capability, the user can easily distribute user information. Also, the user has a way to back up user information.

Audit Storage

What is Tracked

Each stored event contains an attribute of the logged in user ID.

The following events are stored in the audit files:

1. Opening of the audit file, marking *iQ Explorer II* starting up.
2. Closing of the audit file, marking *iQ Explorer II* shutting down.
3. Successful user logons with user information.
4. Failed logons with failed user identification.
5. User log off.
6. Modification to any parameter, identifying the parameter and its new setting.
7. Execution of a weld.
8. Setup change, identifying the new setup name.
9. Setup erase.
10. Alarms.
11. Restore factory defaults.
12. Adding a user.
13. Removing a user.

Continued

PLC Interface

This feature provides a PLC configuration enhancement and a custom HMI user interface using *iQ Explorer II*. Enable the feature to interface to a Dukane Lean Work Cell. See Figure 4-17 to the right.

User levels must be enabled with the Security tab so this PLC interface can be used.

NOTE

Please contact a Dukane custom applications specialist before enabling the PLC Interface feature.

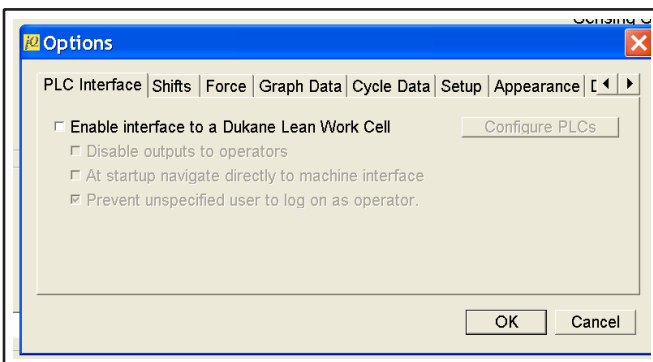


Figure 4-17 Options - PLC Interface Tab

Shifts

When this option is enabled the user can define up to three shifts. Cycle data related to each shift will be saved to unique files. The display will be reset automatically during a change of shift.

See Figure 4-18 to the right.

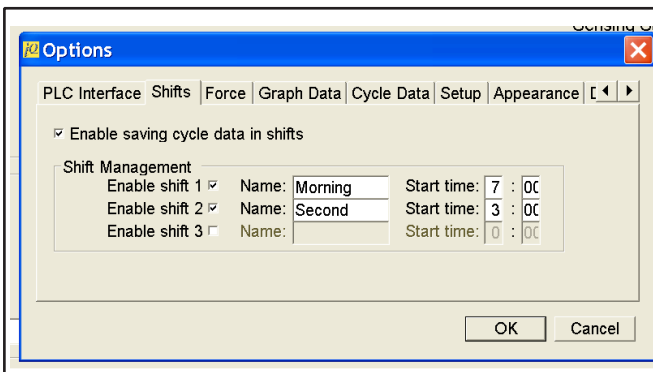


Figure 4-18 Options -Shifts Tab

Continued

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Graph Data

Files Tab - When Automatically Save Graph Data is enabled, graph data for each weld is saved with its own name in the directory specified. If no directory is named, data is saved in the default, *GraphData* subdirectory.

See Figure 4-19 to the right.

Reference graph data can be filed in a user-defined directory. If no directory exists for reference graph data, it will be filed in the default *RefGraph* directory.

Display Tab - When Show Graph in Cycle Data Screen is checked, a smaller copy of the graph is displayed on the Cycle Data tab.

See Figure 4-20 to the right.

Data Types - All graphs are displayed with one millisecond resolution of the complete weld cycle. Storage of all graph types may take up a lot of disk space, so the user may want to disable graph types that are not essential.

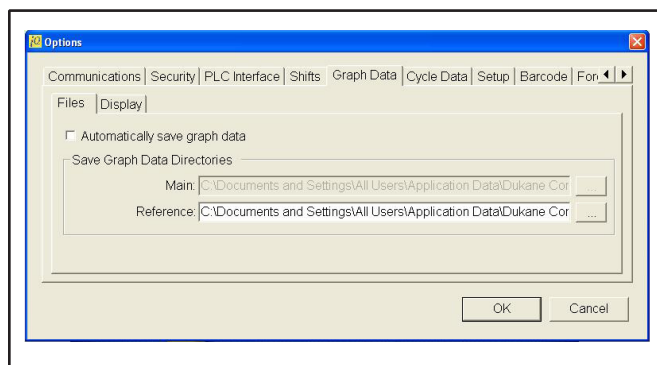


Figure 4-19 Options - Graph, Files Tab

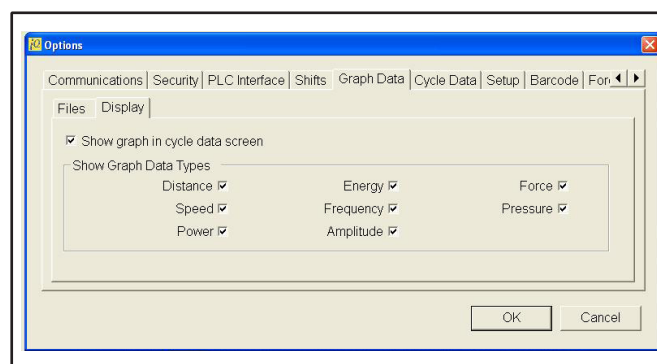


Figure 4-20 Options - Graph, Display Tab

Continued

Cycle Data

Files Tab - Cycle data can be stored in three directories at the same time. **A**

With this feature, the user can store data on a network or on a USB flash drive while saving data on the PC itself. See Figure 4-21 to the right.

If no directory is selected, no cycle data is saved to file.

Data from Multiple Welders - **B** When *iQ Explorer II* is connected to several welders on a network, this option can be enabled so that cycle data will be saved to a single file.

Other Tab - When Display Only Most Recently Welded....is checked, only the most recent cycle data will be shown in the Cycle Data tab.

See Figure 4-22 to the right.

When Limit the File Size... is checked, the number of Kbytes entered limits the maximum size of the cycle data file.

When Limit the Number of Cycle Data... is checked, the cycle data file will never exceed the number of cycles entered.

*When this setting is enabled, you **WILL** lose historical cycle data.*

Period to Save Cycle Data - Data is saved at the interval set by the user. If zero, data is saved only when exiting the program.

Setup

This is the directory where saved setup files are stored. The user may change the directory to another drive, but if this is not done, then the default location will be used for this purpose.

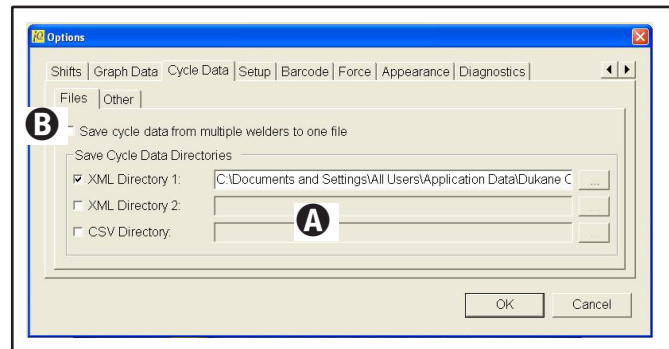


Figure 4-21 Options - Cycle Data Tab - Files

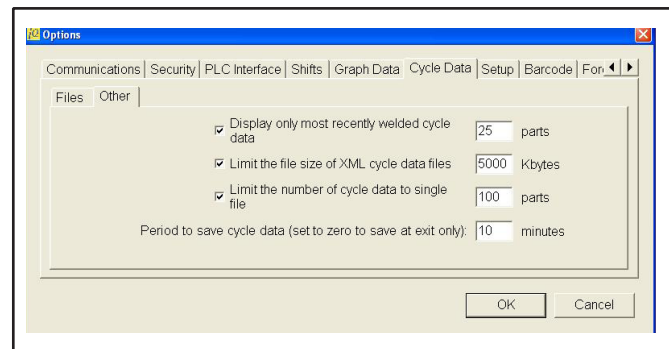


Figure 4-22 Options - Cycle Data Tab - Other

Continued

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Barcode

When Enable Barcode Scan to Activate Setup is activated, between one and three barcode scans can be programmed to select a setup. **A**

See Figure 4-23 to the right.

The user must associate a barcode or set of barcodes with a setup name loaded on the welder or stored in the setup directory of the PC.

Press the Associate Barcodes button. **B**

A new pop-up screen as shown in Figure 4-24 appears.

On this screen (Figure 4-24 to the right) the user links a barcode, or barcodes to a setup name. In addition, buttons are used to browse the setup file, to reset the screen, and to add, modify or delete setup file data.

Once a barcode is scanned, the associated setup will be activated or loaded.

The welder is not permitted to weld until an identified barcode or set of barcodes are scanned properly, and the associated setup has been properly loaded.

*Enabling this feature prevents the use of the welder unless **iQ Explorer II** is connected as well.*

Force

When this option is enabled, the user can have air pressure settings displayed in units of force (instead of pressure). See Figure 4-25 to the right.

Calculated pressure settings are still displayed.

The user needs to select which air cylinder the press uses.

When the generator is paired with a servo press, this feature is not available.

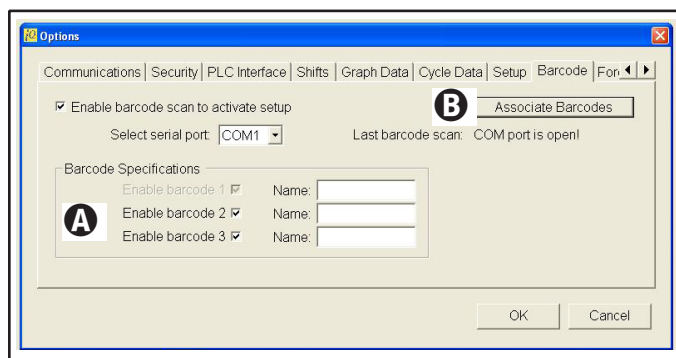


Figure 4-23 Options - Barcode Tab

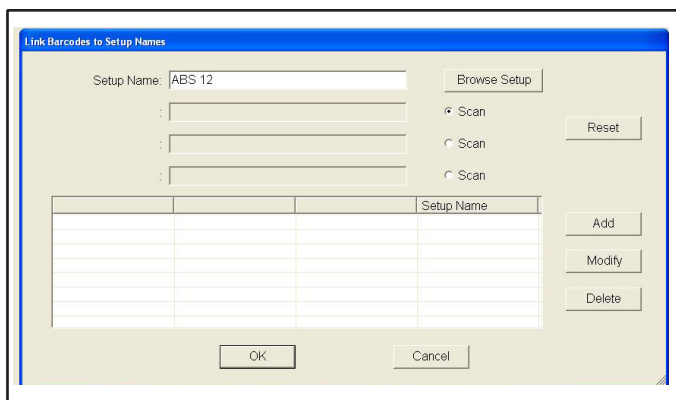


Figure 4-24 Options - Barcode Tab - Link Names

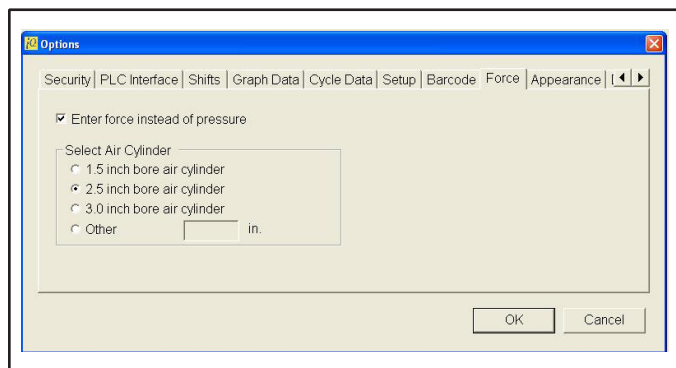


Figure 4-25 Options - Force Tab

Continued

Appearance

With this feature, the PC display image can be enhanced when *iQ Explorer II* is running.

See Figure 4-26 to the right.

There are three files that contain graphic images used by the program:

Default Setup Image - This is an image associated with the setup files, and is displayed on various screens.

Background Image - This is an image centered and displayed that forms the background for *iQ Explorer II*.

Report Watermark - This image is used as a watermark on reports generated for setups.

The user may choose images other than the original default images.

The image of a part as it appears on the tab for Hardware in Figure 4-27 shown to the right illustrates this option.

Diagnostics

With this feature enabled, communication between *iQ Explorer II* and the *iQ* generator can be diagnosed by Dukane during a troubleshooting process.

Figure 4-28 to the right shows that **Save Messages** can be enabled. This activates the designated directory to receive any messages that pass to or from the software to the generator.

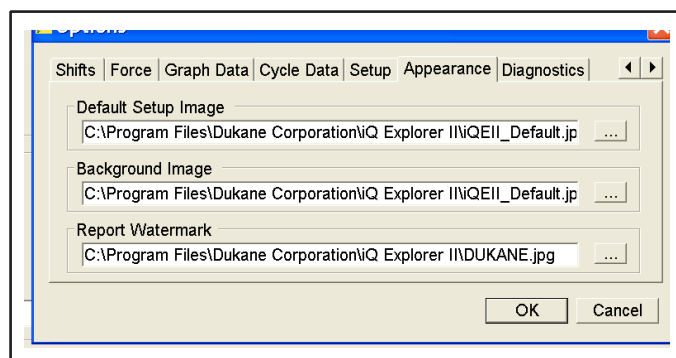


Figure 4-26 Options - Appearance Tab

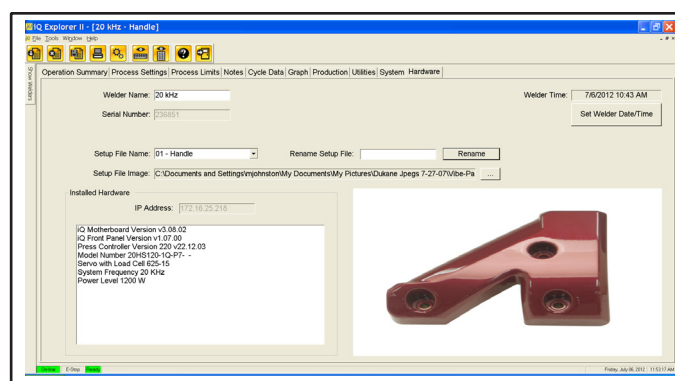


Figure 4-27 Options - Appearance - Default Image Changed

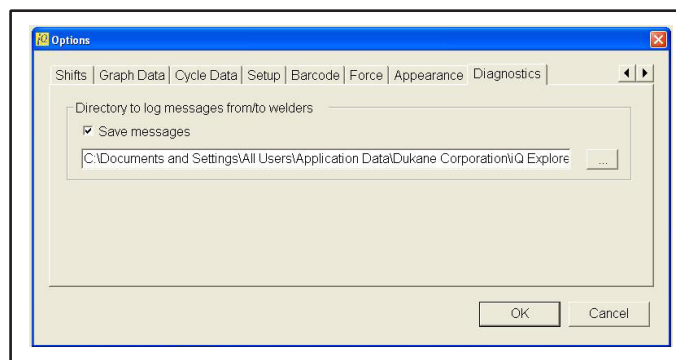


Figure 4-28 Options - Diagnostics Tab

Basic Setup

When *iQ Explorer II* starts up, it seeks communication with ES Model *iQ* welders. It can establish a session with as many connections as the user has welders.

In the following example, two welders have been detected on the network.

1. To view the available connections press the **Show Welders** button to the left of the application as shown in Figure 4-29. Once a welder has been detected, all setup information in the welder is synchronized with the PC.

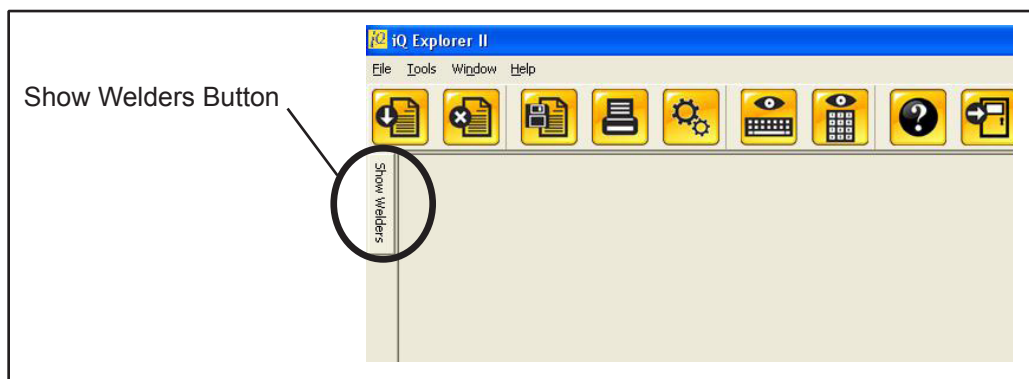


Figure 4-29 Setup - Show Welders

2. Click on a welder button to open the interface to it.
Figure 4-30 below shows that Welder 1 was selected.

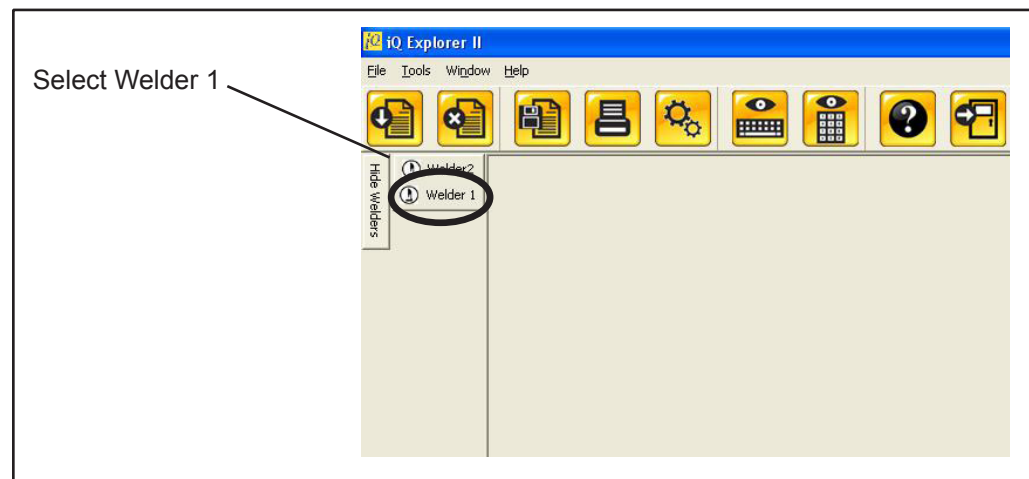


Figure 4-30 Setup - Select a Welder

Continued

Basic Setup

3. The Hardware tab is the initial tab displayed following selection of a welder. This tab contains information specific to the identification of the welder itself. See Figure 4-31 below for location of the items in the list that follows.

- A** - Welder name.
- B** - Serial number unique to Welder 1.
- C** - List of 25 setups that are currently loaded in the welder.
- D** - New name for the setup. Click Rename to apply.
- E** - Use the button to search the PC for a setup file to be displayed.

- F** - Current time kept in the welder.
- G** - Button used to apply the PC time to the welder.
- H** - IP address of the connected welder.
- J** - Model and version information of embedded software.

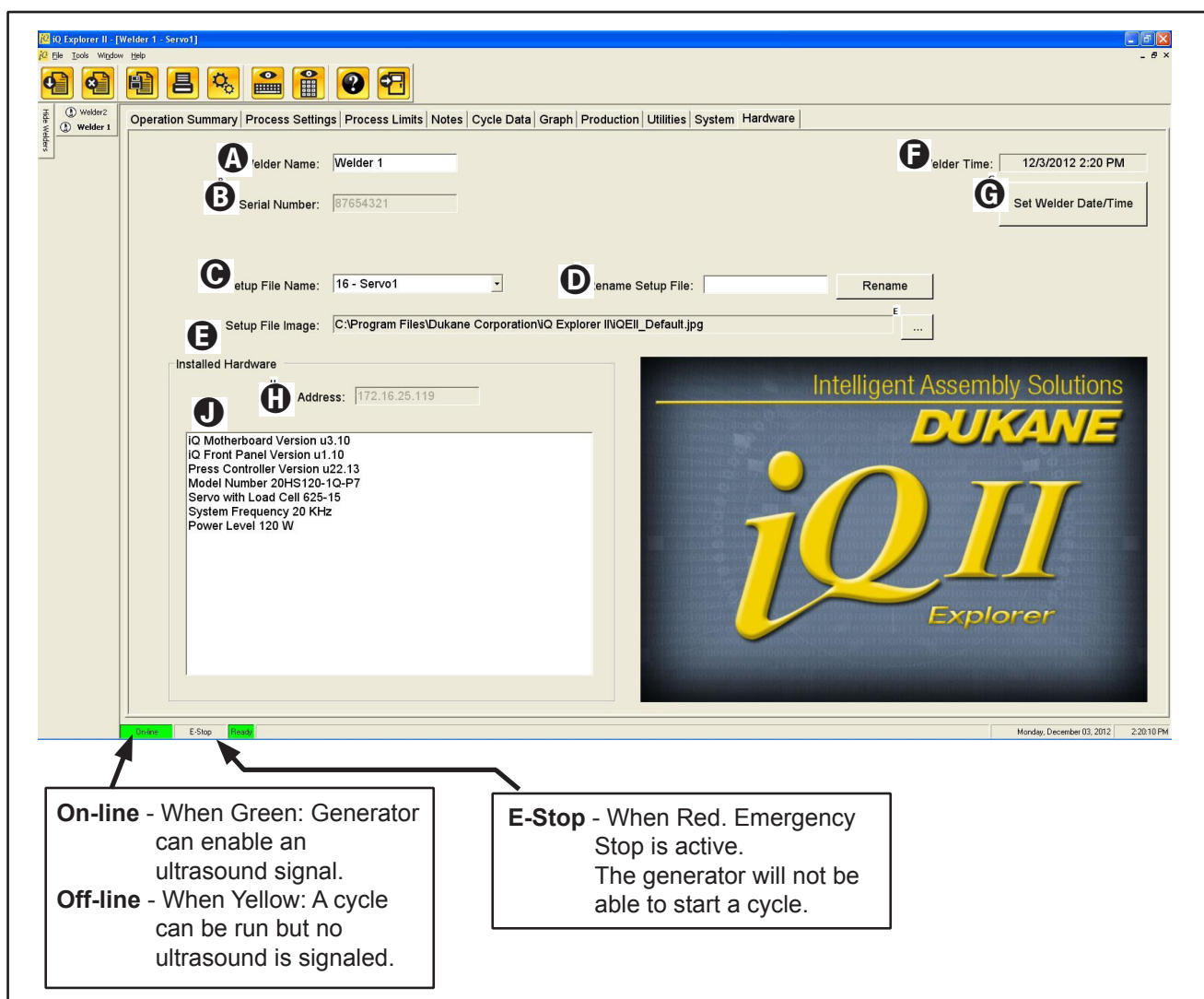


Figure 4-31 Setup - Hardware

Continued

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Basic Setup

4. To configure a setup to execute a weld, click on the **Process Settings** tab, and modify the settings listed below and shown in Figure 4-32.

- A** - Initiate Mode, Top of Stroke for *iQ* servo.
- B** - Settings before and at trigger.
- C** - Settings to monitor the weld.
- D** - Enable Melt Detect (patented *iQ* servo setting).
- E** - *iQ* servo Motion Control and profiling.
- F** - Hold settings, Travel Limit for *iQ* servo.
- G** - Afterburst.
- H** - Amplitude and Power Regulation.
- J** - Enable Advanced settings.
- K** - Advanced servo settings.

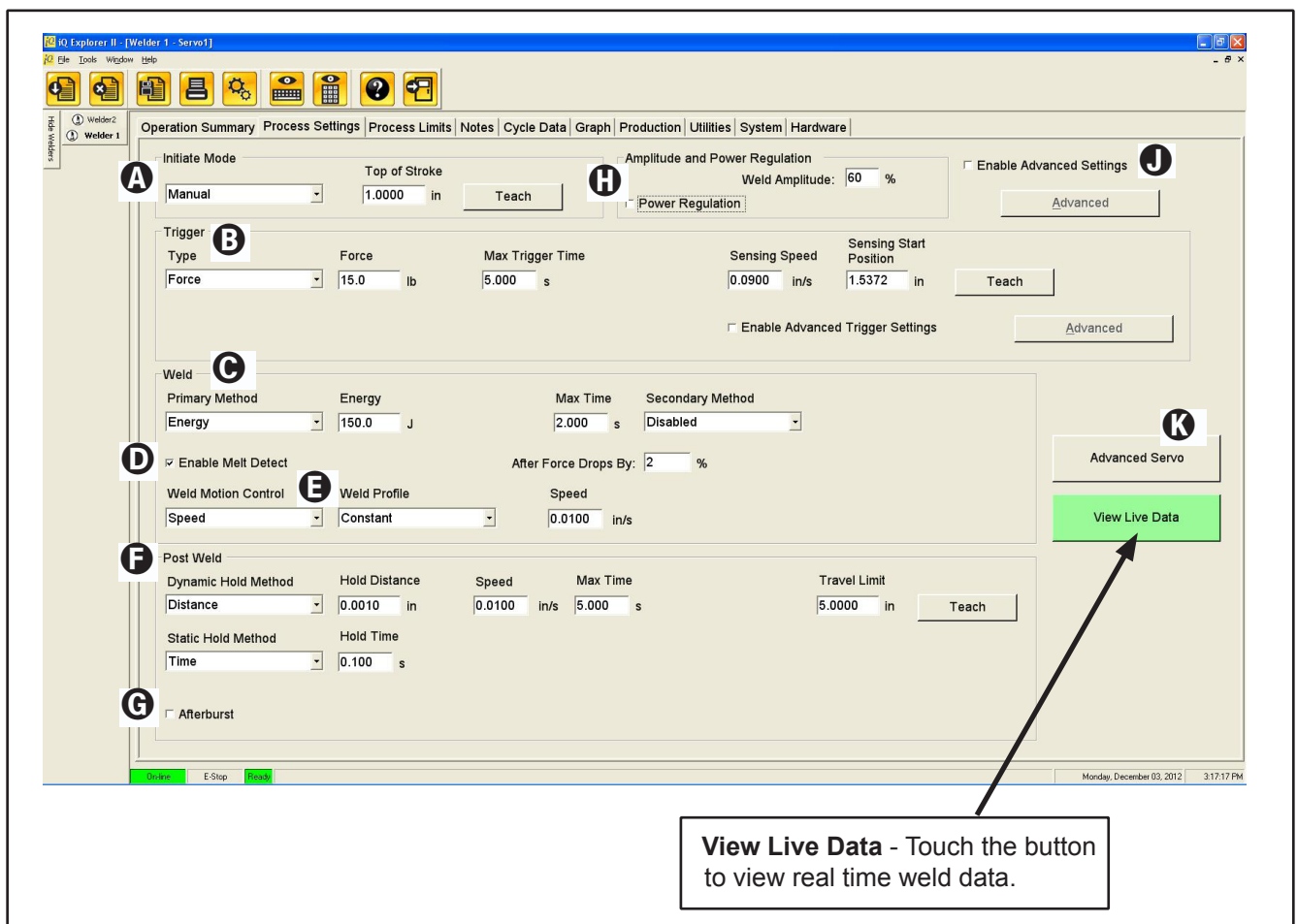


Figure 4-32 Setup - Process Settings

Continued

Basic Setup

- 5. To weld a part successfully, some users require process limits for specific process characteristics. These settings determine whether a cycle is good, bad or suspect. The user may also mark a cycle as bad when an alarm is detected.

Cycle data for all process characteristics are always saved. The user determines whether these are shown in the cycle data display.

Latch on Bad Part - Only available when Initiate Mode is Manual.

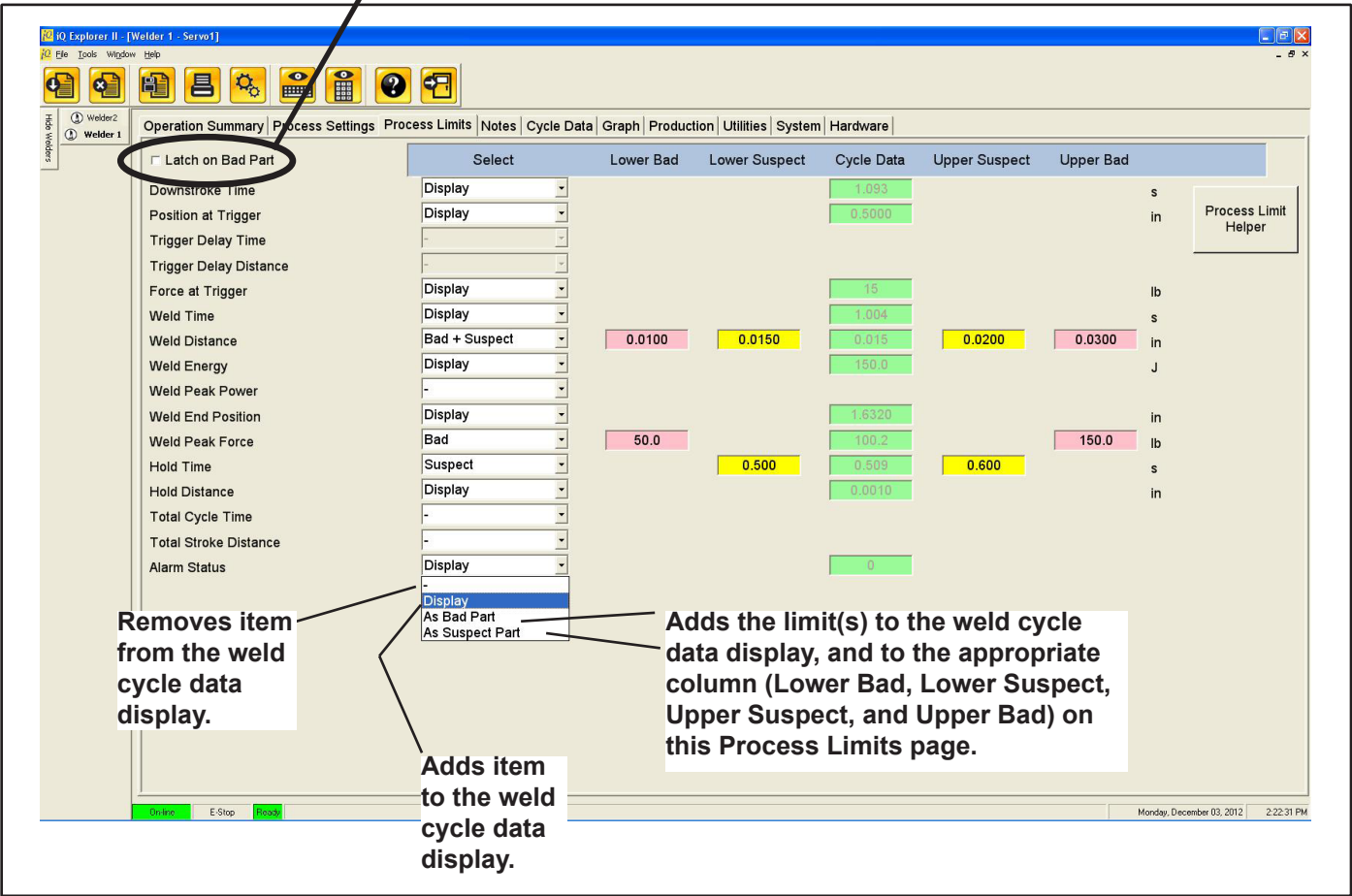


Figure 4-33 Setup - Process Limits Drop Down Menu Detail

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Process Limits Helper

This feature assists users with setting process limits from an aggregate of cycle data derived from good parts.

Limit Helper is an advanced *iQ Explorer II* feature designed to assist in setting upper and lower process limits. Typically, this is some number of a controlled lot of parts welded. The Process Limits Helper can calculate standard deviation and average value for each process parameter defined, for this controlled lot. This statistical information along with part inspection is a very useful tool in setting the range for upper and lower suspect and/or bad part limits.

See http://www.dukane.com/us/PPL_iQ_Servo_Press.htm for more information on Limit Helper.

Figure 4-34 shows the display after the Process Limit Helper button has been activated, but not enough part data exists for the feature to be used.

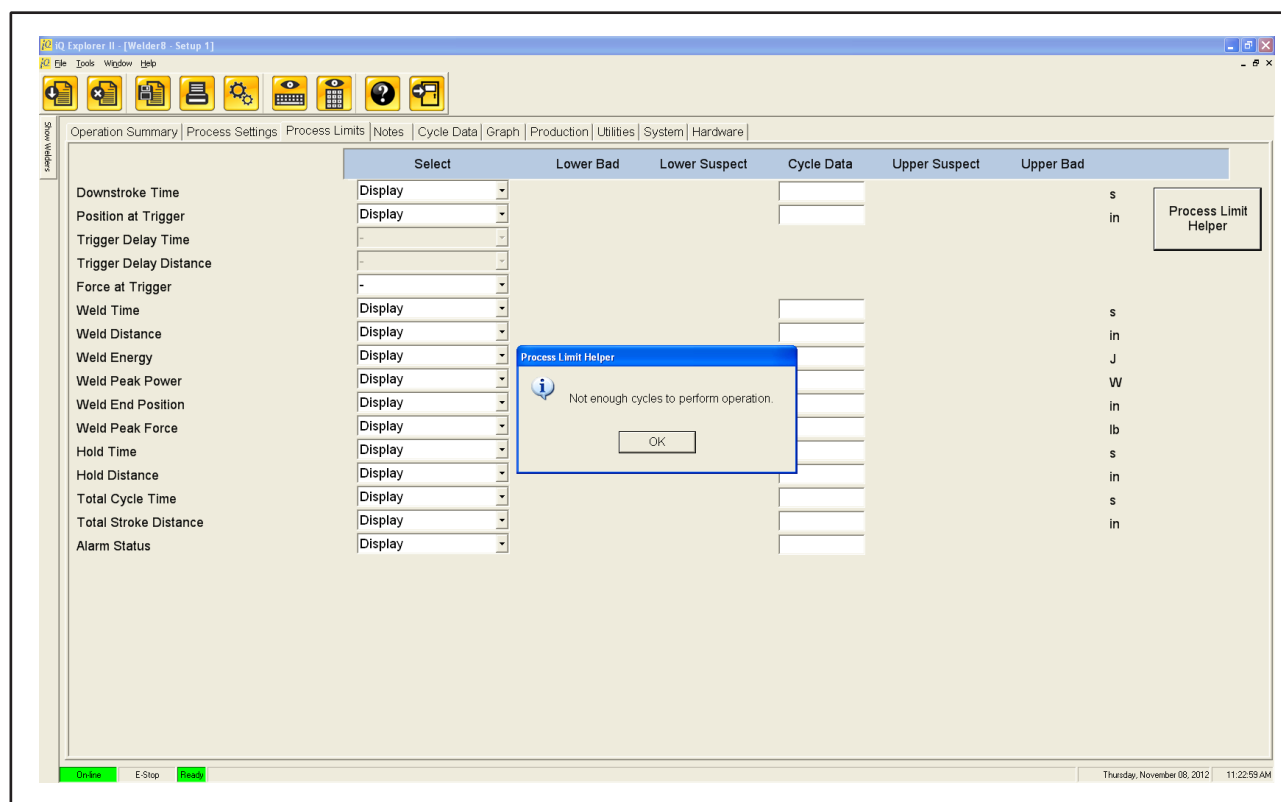


Figure 4-34 Setup - Process Limits Helper - When Not Enough Data

Continued

Basic Setup

7. If the user has more information to associate with a setup, click the **Notes** tab. A sample display is shown in Figure 4-35 below.
Several text entry boxes appear. Whatever text is entered is stored within the setup.



Figure 4-35 Notes

Continued from Previous Page

Basic Setup

8. Click on the Cycle Data tab to reveal accumulated cycle data from all recent weld cycles.
To select what columns to display, go to the Process Limits tab.

Figure 4-36 shows a sample of the Cycle Data page. The columns displayed reflect the Process Limits example shown in Figure 4-33.

Part Count	Part Analysis	Downstroke Time	Position at Trigger	Force at Trigger	Weld Time	Weld Distance	Weld Energy	Weld End Position	Weld Peak Force	Hold Time	Hold Distance	Alarm	Setup Name	Date	Time
Low Bad/Low Suspect						0.0100/0.0150			50.0/	0.500					
High Suspect/High Bad						0.0200/0.0300			150.0/	0.600/					
8	GOOD	1.055	0.5000	15.0	1.080	0.0150	150.0	1.6320	100.2	0.515	0.0010	0	Servo1	03 Dec 2012	14:23:33
7	GOOD	1.041	0.5000	15.0	1.083	0.0150	150.0	1.6320	101.0	0.537	0.0010	0	Servo1	03 Dec 2012	14:23:31
6	GOOD	1.057	0.5000	15.0	1.092	0.0150	150.0	1.6320	100.6	0.574	0.0010	0	Servo1	03 Dec 2012	14:23:03
5	GOOD	1.025	0.5000	15.0	1.058	0.0150	150.0	1.6320	100.1	0.596	0.0010	0	Servo1	03 Dec 2012	14:23:01
4	GOOD	1.022	0.5000	15.0	1.049	0.0150	150.0	1.6320	100.6	0.545	0.0010	0	Servo1	03 Dec 2012	14:22:59
3	GOOD	1.049	0.5000	15.0	1.055	0.0150	150.0	1.6320	100.4	0.532	0.0010	0	Servo1	03 Dec 2012	14:22:57
2	GOOD	1.026	0.5000	15.0	1.011	0.0150	150.0	1.6320	100.1	0.509	0.0010	0	Servo1	03 Dec 2012	14:22:55
1	GOOD	1.020	0.5000	15.0	1.009	0.0150	150.0	1.6320	100.7	0.513	0.0010	0	Servo1	03 Dec 2012	14:22:53

Figure 4-36 Setup - Cycle Data

Continued

Basic Setup

9. Click on the Graph tab.
Then, click on the Graph Setup button.
Next, make choices to set up the graphing function to illustrate a pictorial view of the welding process.

Make/Change Selections: (Figure 4-37 below shows two views of the graph setup window.)

A - Axis Labels - Choose labels for left, right, and horizontal axes of the graph. The figure shows a drop down list from which to select.

B - Zoom - Choose when the graph display of the cycle should start and stop. The figure shows a drop down list from which to select.

C - Reference - Select a graph to overlay with a graph from the current cycle. A reference graph can be saved for any setup at any time. Reference graphs are stored in a directory separate from ordinary graphs.

A sample graph appears on the next page.

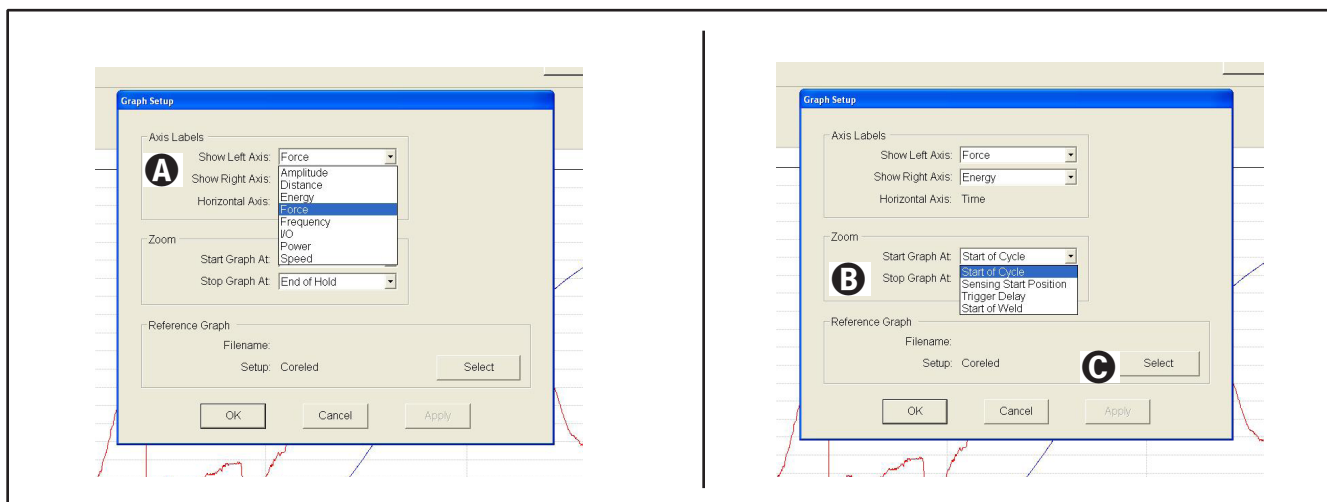


Figure 4-37 Setup - Graph Setup

Continued

Continued from Previous Page

Basic Setup

- Click on the Graph Display tab.

See Figure 4-38 below to view a sample graph.

NOTE

The values in the upper left portion of the graph display seen in the figure below, show the X and Y values for the cursor position. Cursor movement causes corresponding changes to these values.

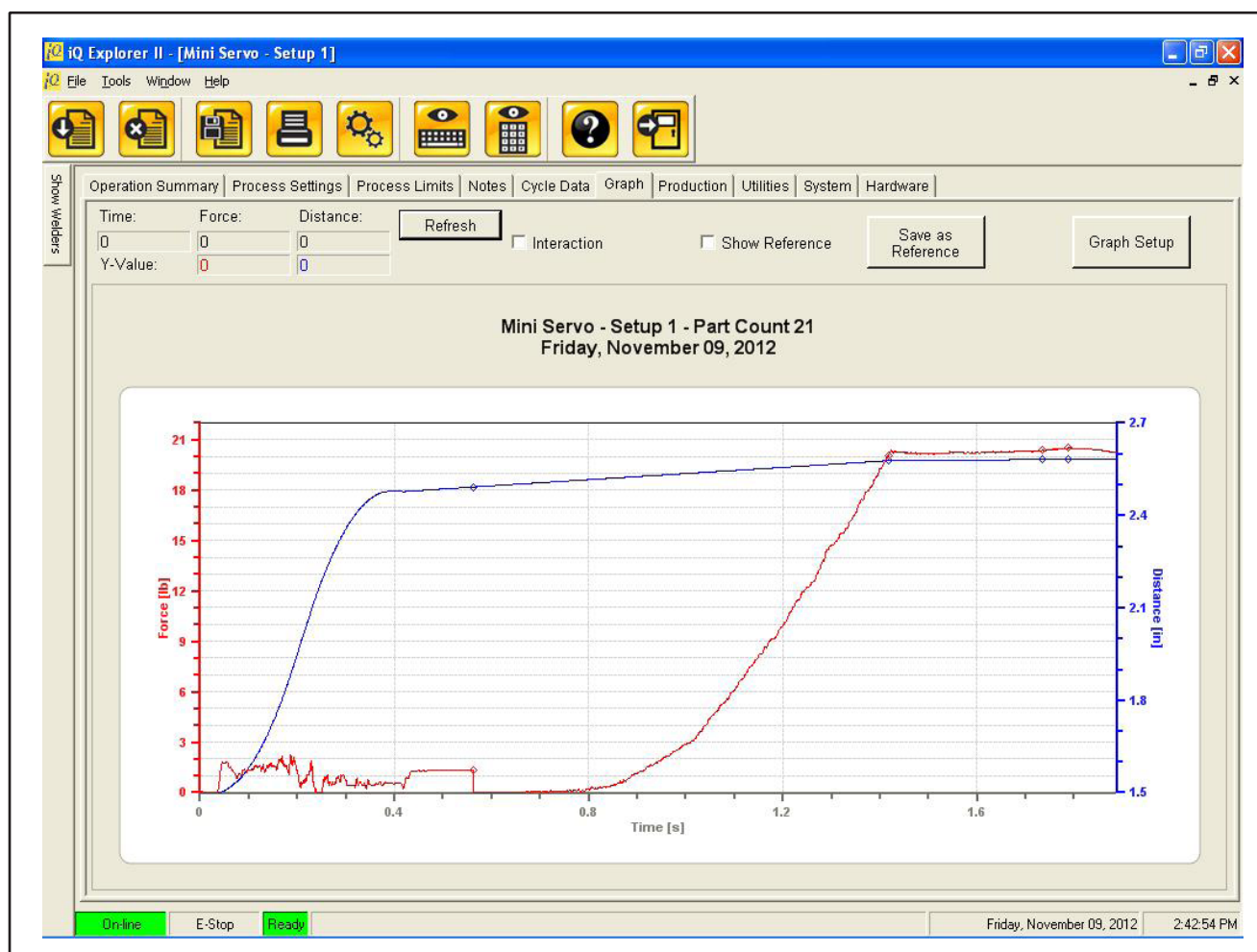


Figure 4-38 Setup - Graph Display

Continued

Graph Features

◇ = **Transition Point** - This is a moment in the weld cycle where one phase of the cycle ends and another phase begins. Place the cursor on a transition point to read data about that specific event.

Save as Reference - Press this button to save the current graph as the reference graph associated with the current setup.

Show Reference - Check the box to have the reference graph appear along with the real time graph.

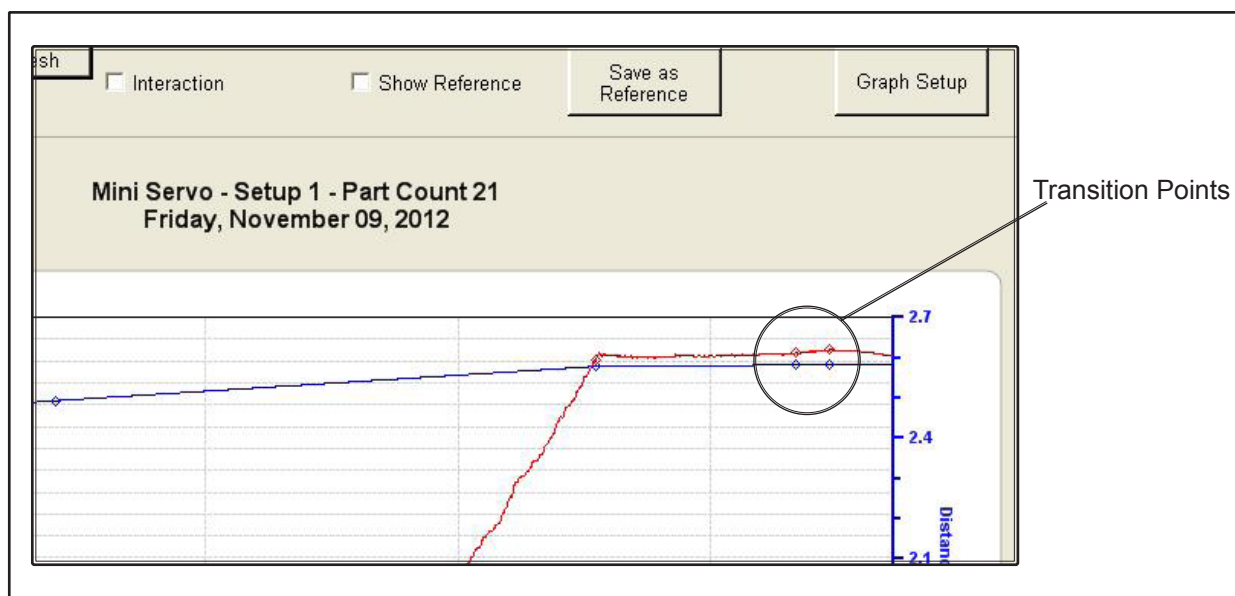


Figure 4-39 Graph Display Detail

Continued

Continued from Previous Page

Graph Features

Interaction - Check the Interaction box **A** to activate interactive features that use the *left* button of the computer mouse.

These features, Zoom, Scale, and Translate are shown at **B** in Figure 4-40 below.

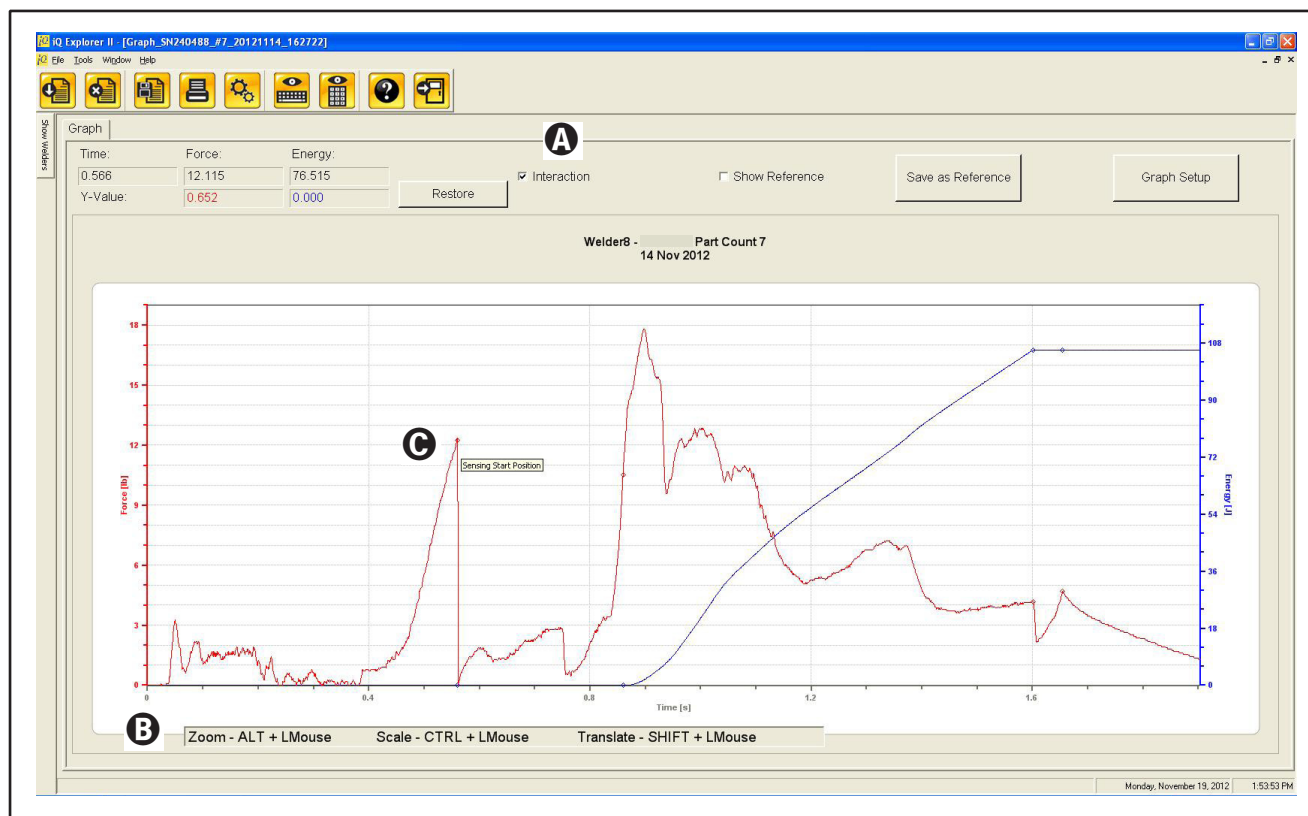


Figure 4-40 Setup - Interaction Points

C highlights a transition point in the weld cycle. The name of the transition point appears when the cursor rolls over that place on the graph.

Continued

Basic Setup

11. Click on the Production tab.
This page provides a graphic analysis of parts produced — the good, the suspect, and the bad. See Figure 4-41 below for a sample of this type of graphic feedback.

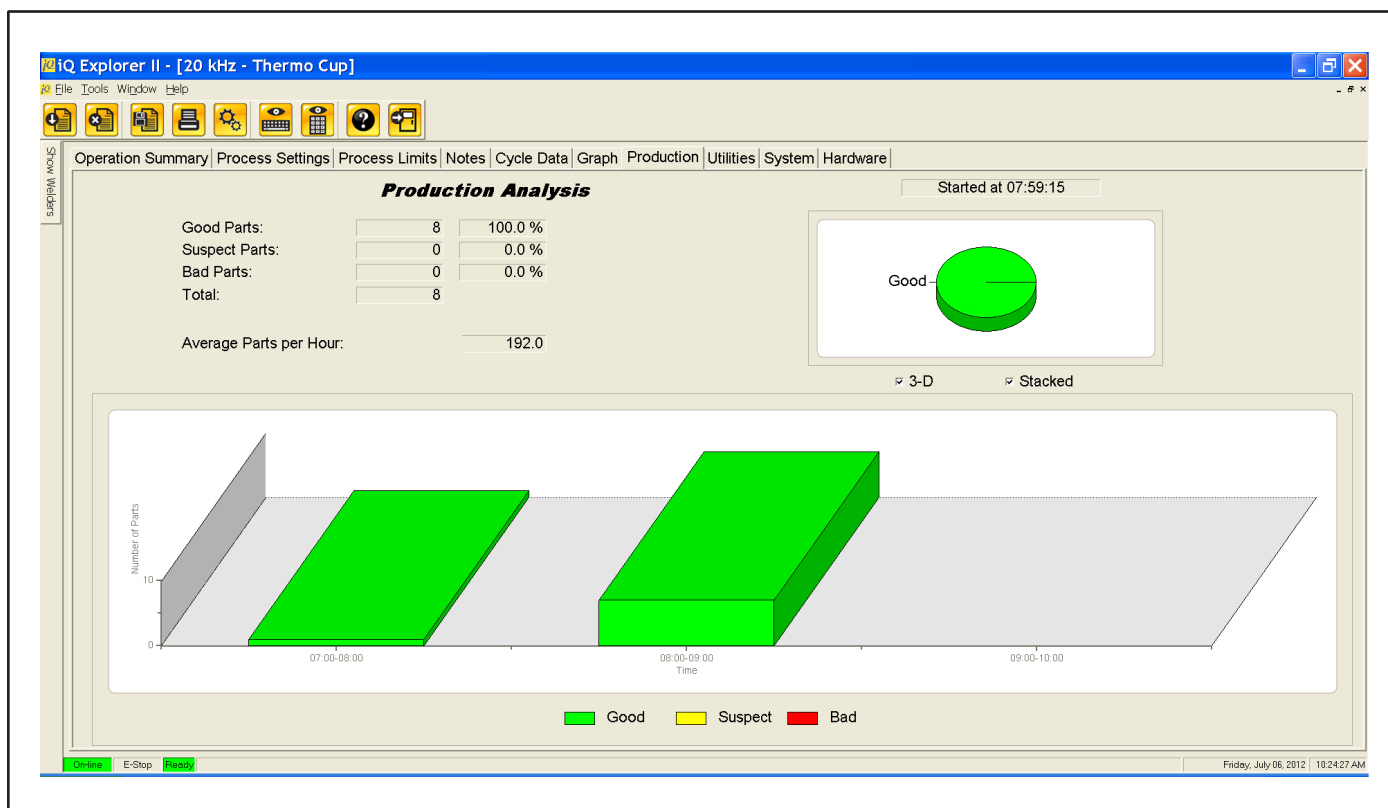


Figure 4-41 Setup - Production Display

Continued

Continued from Previous Page

Basic Setup

12. Click on the **Utilities** tab.

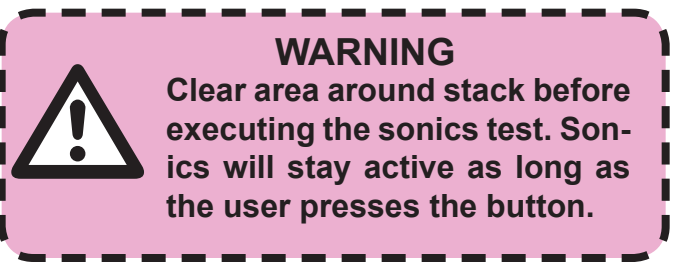
Some setup management and diagnostic tools are offered here. See Figure 4-42 below for these things.

A - Part Count - This utility permits part count to be reset or modified. The utility can also be used to prevent bad parts from being counted, and to reset the latch that can occur when Latch on Bad Part is enabled.

B - Setup Utilities - Use **Setup Control** to choose a setup. One setup can be erased with **Erase (a) Setup** or all setups can be erased with **Erase All Setups**.

This section can be used to select a different stored setup from the welder. Renaming the setup and selecting a different image for the setup can be done here as well.

C - Test -



The user may press and hold the Test button for as long as necessary. When the user's finger is lifted (from a touch screen) or the finger is released from the button (of a mouse), the test ends and a graph is displayed. See Figure 4-43.

D - View real time data.

E - View the alarm history.

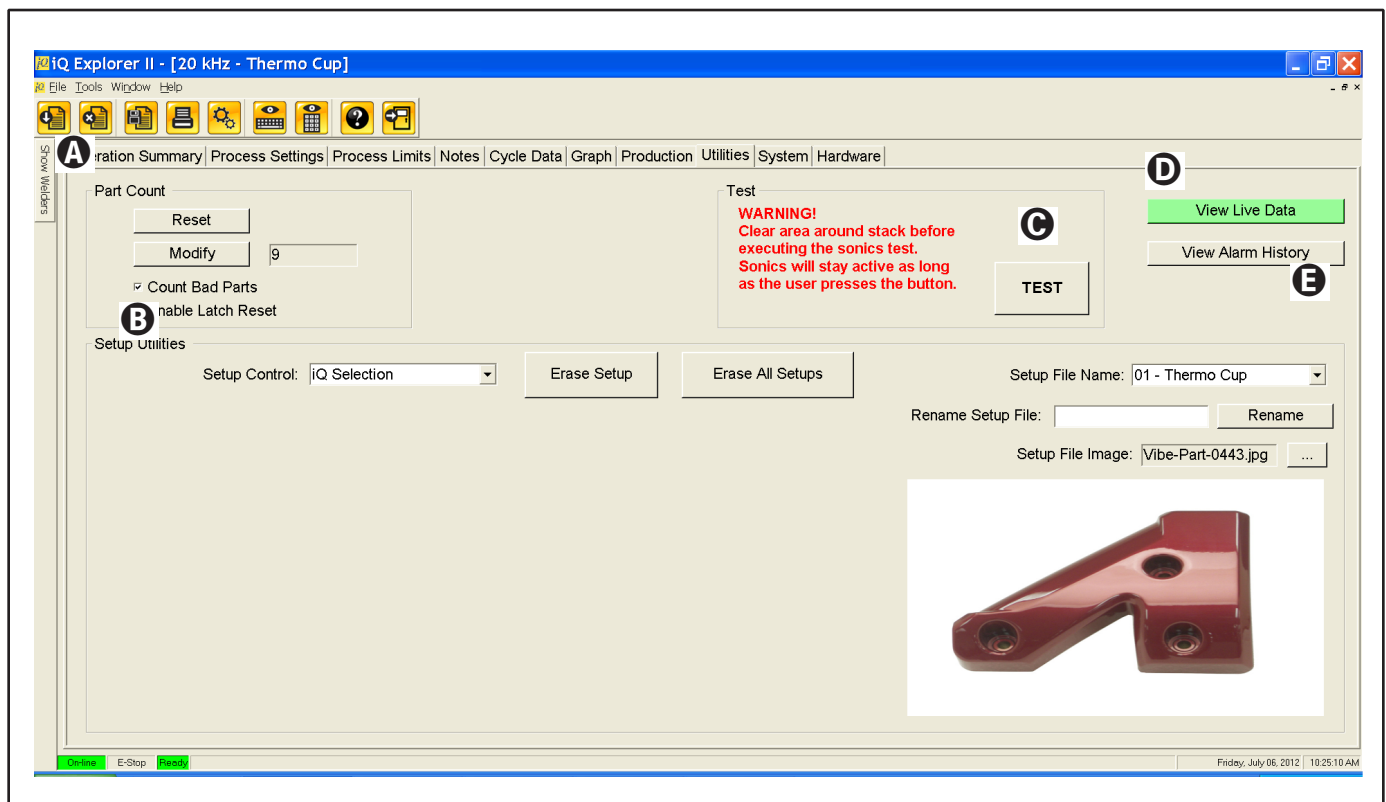


Figure 4-42 Setup - Utilities

Continued

Utilities Sonics Test

Figure 4-43 below illustrates the kind of data displayed after the TEST button is activated on the Utilities page.

Click EXIT when finished reviewing this data.

NOTE

The values in the upper left portion of the graph display seen in the figure below, show the X and Y values for the cursor position. Cursor movement causes corresponding changes to these values.

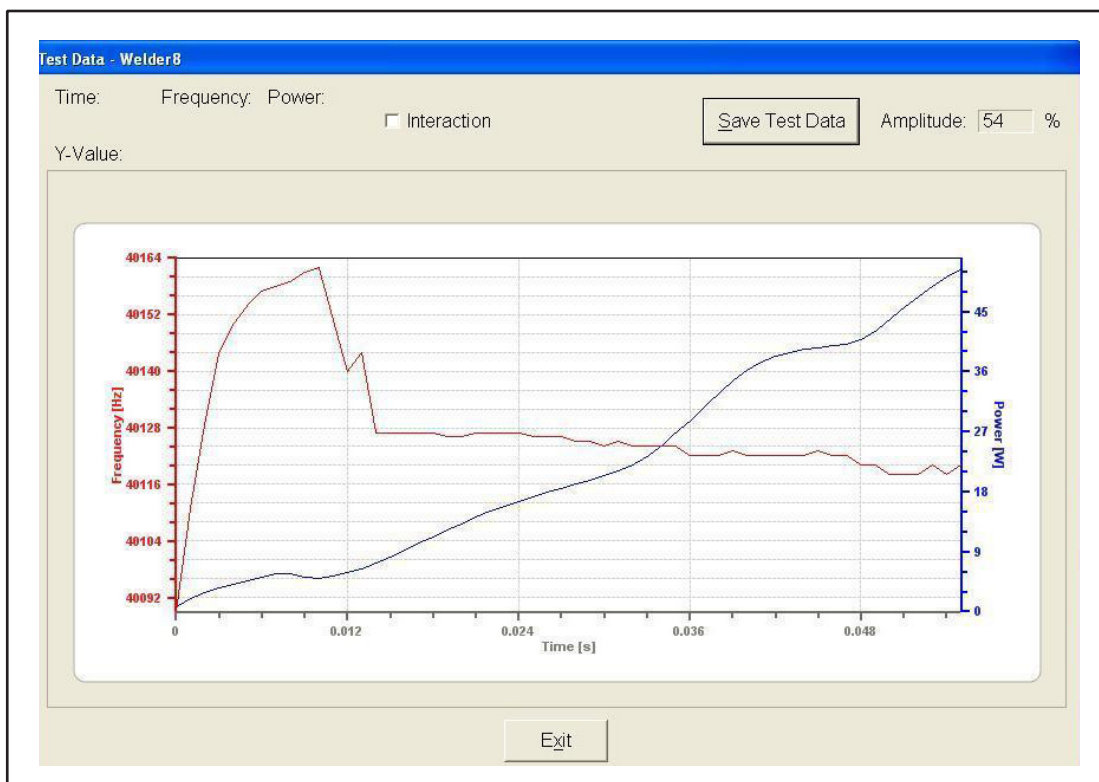


Figure 4-43 Setup - Utilities Test Display Sample

Continued

Continued from Previous Page

Basic Setup

13. Click on the System tab.

A **WARNING** appears immediately indicating that changing hardware settings may affect operation of the generator.

Click OK to proceed with hardware modification.

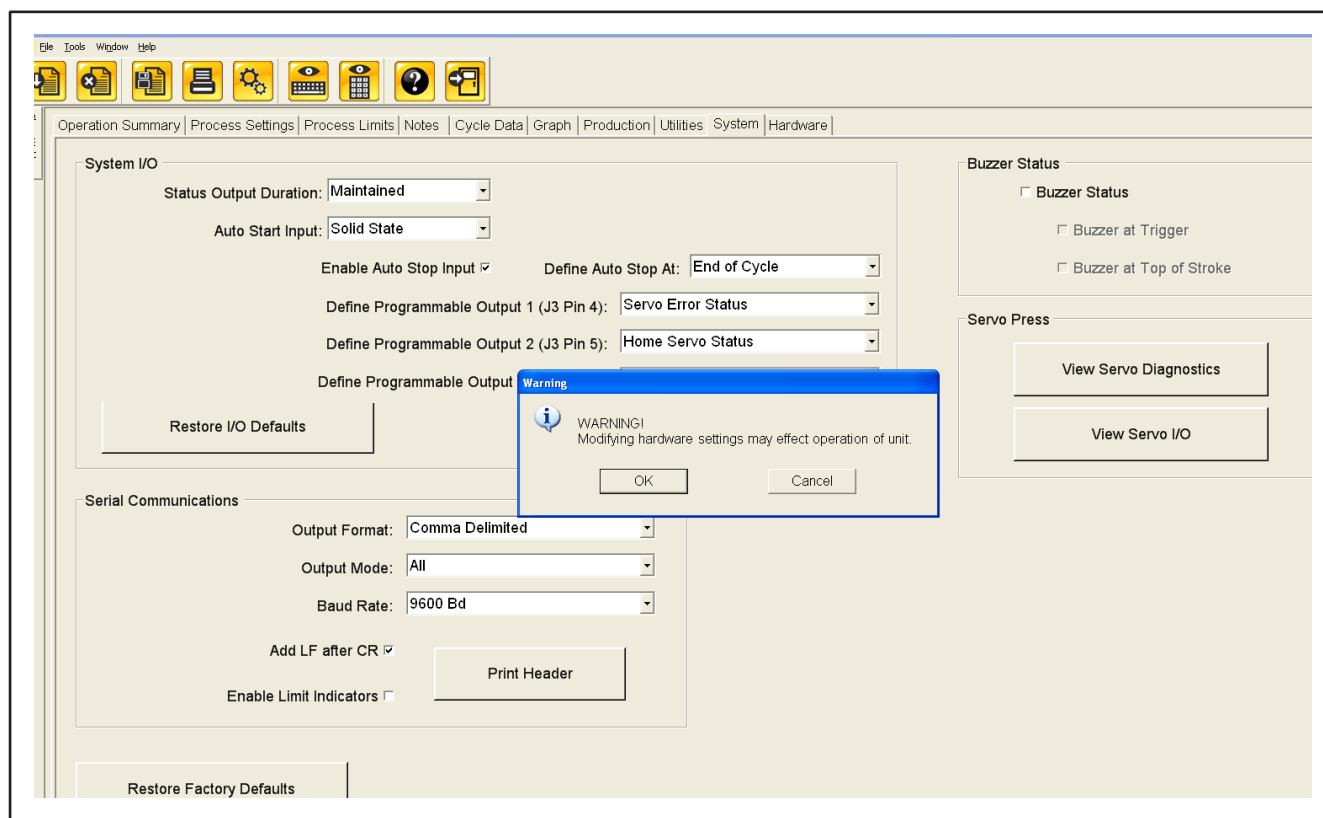
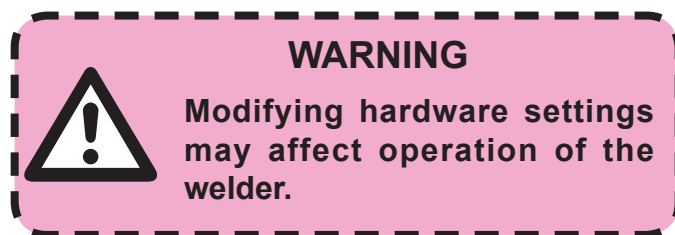


Figure 4-44 Setup - System Warning

Continued

System [modifications]

Hardware fine tuning is offered on the System page. See Figure 4-45 for an overview.

Make/Change Selections:

A - System I/O - Designed for flexibility when integrating the ultrasonic system with automation.

Refer to Dukane's website for Application Notes that deal with automation interface:

http://www.dukane.com/us/DL_ApplData.asp.

B - Buzzer Status - When this setting is disabled, the buzzer does not make a sound. When enabled, the buzzer sounds when cycle data is outside the suspect or bad part limits.

Buzzer at Trigger - The buzzer sounds when the trigger condition is met.

Buzzer at Top of Stroke - The buzzer sounds when the press is moved to its top of stroke position.

C - System - Serial Communications - This is for configuring the serial port as an output for cycle data.

Output Format - Determines how cycle data fields are separated.

Output Mode - Determines what is sent (All, Good, Bad, etc.)

Baud Rate - Speed setting of the serial port in use.

Add LF after CR - Determines what follows a data record: a carriage return (CR) only, or a CR followed by a line feed (LF).

Enable Limit Indicators - When enabled, a "<" or a ">" precede a field of cycle data that is either lower or higher than a process limit, respectively.

Print Header - Press this button and it triggers the transmission of the delimited header for cycle data to the serial port.

D - Servo Press - Specific to servo press systems:

View Servo Diagnostics - This button gives access to an array of low-level readings from the servo controller.

View Servo I/O - This button provides access to current servo and iQ generator input status. Servo performance results can also be acquired.

Engineers at Dukane Corporation, can use these readings to help diagnose problems and to provide assistance for welding applications.

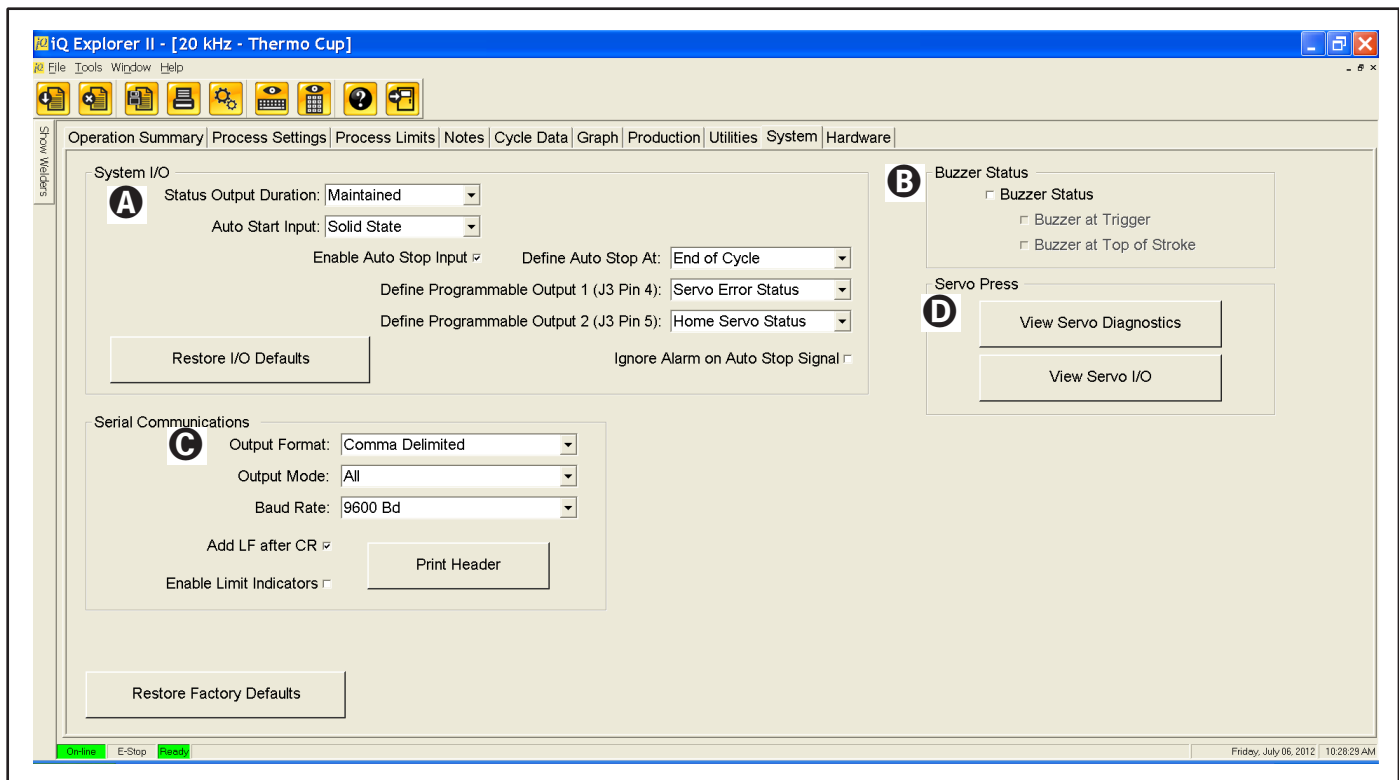


Figure 4-45 Setup - System Overview

Continued

Continued from Previous Page

Basic Setup

14. Click on the Operation Summary tab.

Figure 4-46 shows a sample of data as it might appear in real time. The essentials of the setup are shown along with graph and cycle data.

In addition, by clicking on the View Live Data button **A**, generator output data can be seen as it happens.

The Graph Setup button **B** can be clicked allowing the operator to customize the graphing display.

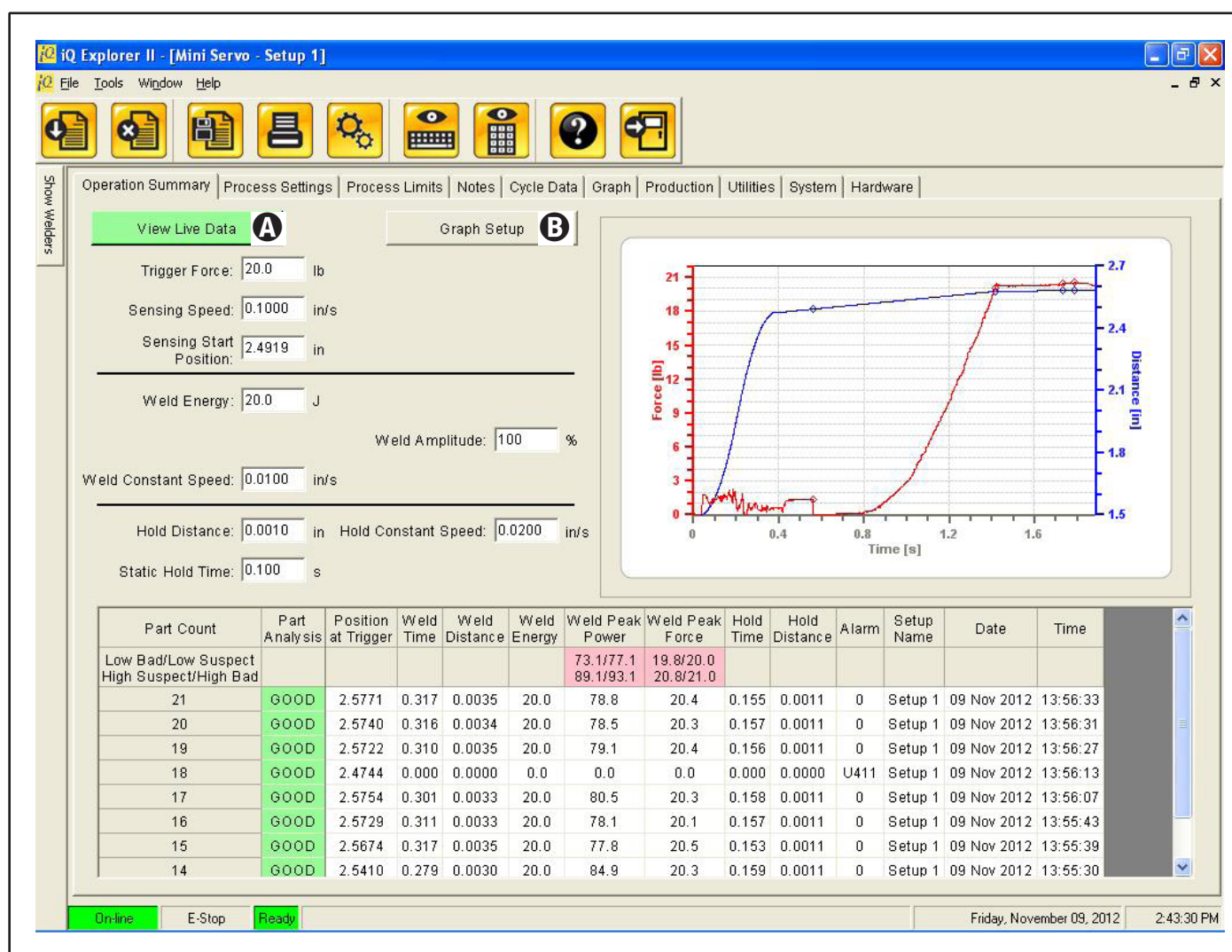


Figure 4-46 Operation Summary

Save and Retrieve Setup Files

1. Click File on the Main Menu. (Refer to Figure 4-47.)
2. From the drop-down menu you can save a setup file (to a file on the PC's hard drive) in several ways: **Save Current Setup File**, or
Save Current Setup File As...
3. To retrieve a setup, click on **Select Active Setup** to get a list of setups that are active. Then select a setup from that list.

Save and Retrieve Cycle Data

1. Click the Options icon. 
2. Click on the Cycle Data tab.
3. **Data Storage** - Cycle data can be stored in three directories simultaneously. The user can store data on a network or on a USB memory stick while still saving it on the PC.

If no directory is selected, then no cycle data is saved to file. See the figure below.
4. **Data from Multiple Welders** - When *iQ Explorer II* is connected to multiple welders on a network, the user can enable this option to have all cycle data saved to a single cycle data file.

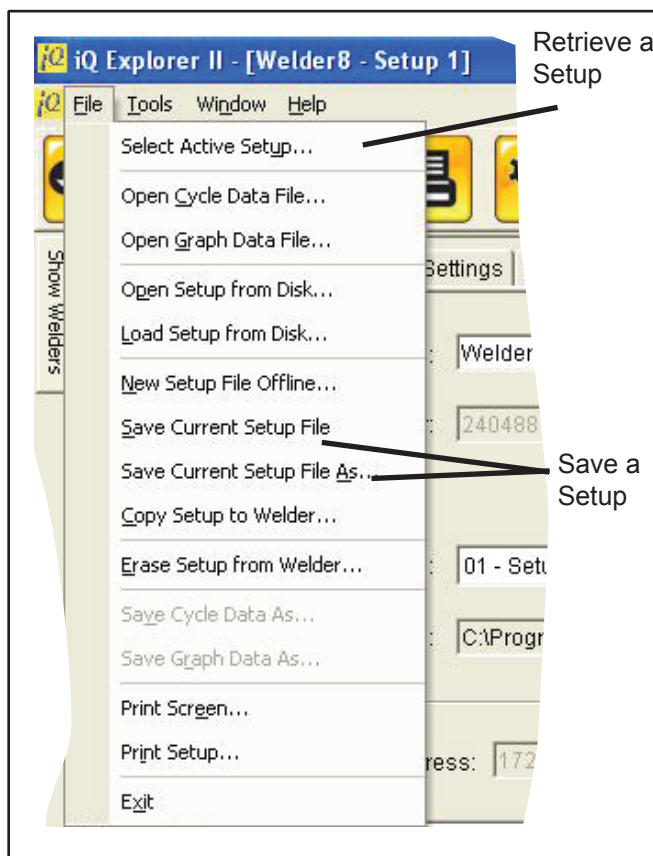


Figure 4-47 Save and Retrieve Setup Files

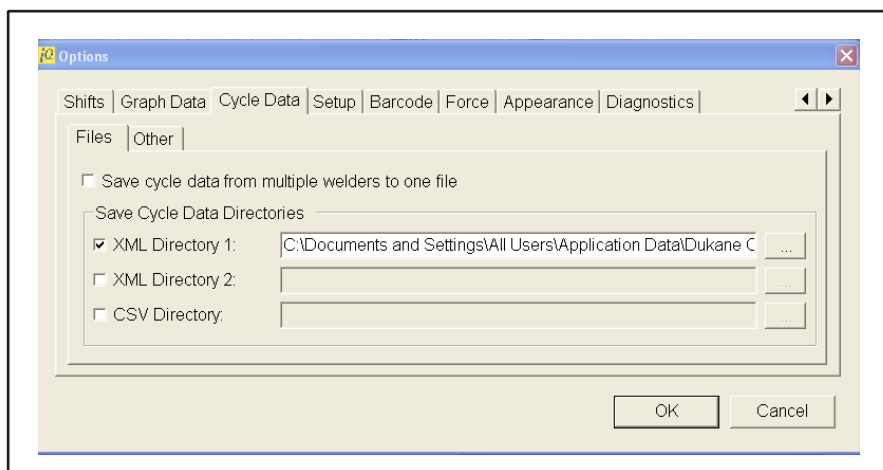
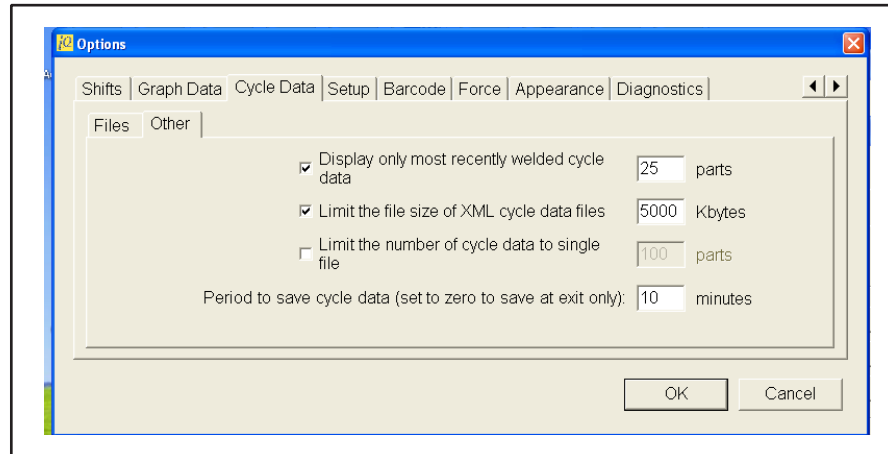


Figure 4-48 Save Cycle Data - 1

Continued

Continued from Previous Page**Figure 4-49** Save Cycle Data - 2

See the figure above for the next four Cycle Data features.

5. **Display Most Recent Data** - Only the most recent cycle data will be displayed when this feature is selected.
Regardless of this number, all cycle data is saved.
6. **Limit File Size** - The number of Kbytes entered will limit the maximum size of the cycle data file. When it is time to save the cycle data file and it is in excess of this amount, a new file will be created to store any future cycle data.
Regardless of the file size, all cycle data is saved.
7. **Limit Cycle Data** - When this option is selected, the cycle data file will never exceed the number of cycles entered. Only the most recent results will be saved to a single, undated file.
When this setting is enabled, you WILL lose historical cycle data.
8. **Saved to File Rate** - Cycle data is automatically saved to file at this rate. If the user sets it to zero, cycle data will only be saved on exit.

Save and Restore Graph Data

1. Click the Options icon. (Refer to Figure 4-50.)
2. Click on the Graph Data tab, and then the Files tab.
3. Using the Main and Reference categories, you may enter the designated directories where graph data and reference graph data are stored.
4. Using the Display tab you may limit the types of data that will be stored in the graph. Another selection to make allows you to display a smaller sized graph in the cycle data screen.

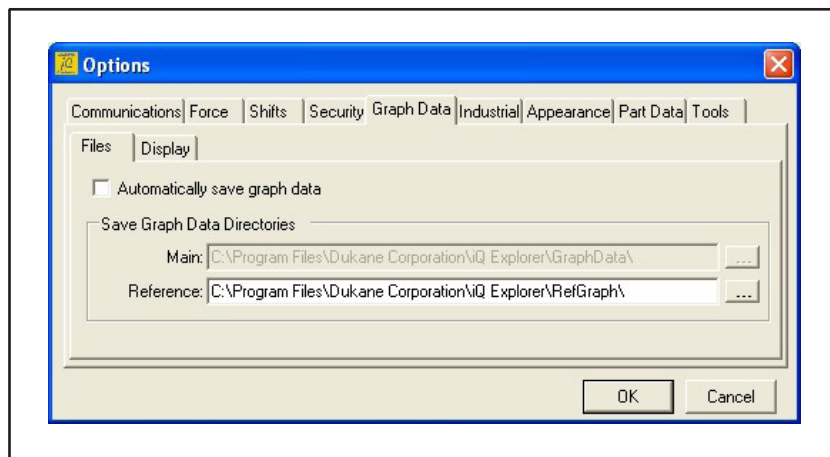


Figure 4-50 Save Graph Data

Using the Help System

This help system is a reference tool to assist in understanding key terms of the ultrasonic welding process. It can also provide information about software features and functions. The *iQ Explorer II* Help function can be accessed using the top menu bar, or by pressing the F1 key as explained below.

Top Menu Bar

Help is one of the top menu bar items (as shown on the right in Figure 4-51).

Clicking **Help** from the menu and then clicking on **Help** opens the **Help** window. An example of the window is shown in Figures 4-52 and 4-53 on the next page.

About *iQ Explorer II*

Another selection that can be made from the top menu bar after clicking on **Help** is to select **About iQ Explorer II**. A click on that phrase brings up a window containing facts about the software version used by the PC.

Help File Organization

A **Contents** tab and an **Index** tab are two entry points to the Help file information.

Contents groups the Help file information into these eight main categories:

Hardware; Process Control; Process Limits;
Notes; Graph; Utilities; System; and,
Options.

The **Index** is an alphabetical list of words and phrases found in the Help file.

The figures on the next page illustrate that the term, *Cycle Data Storage* was found through both **Index** and **Contents**.

Using the F1 Key

The F1 key can be tapped to activate **Help** when:

- 1) the cursor is positioned in an item that can be edited, such as a text box, drop down list, or check box and,
- 2) that item is linked to **Help**.

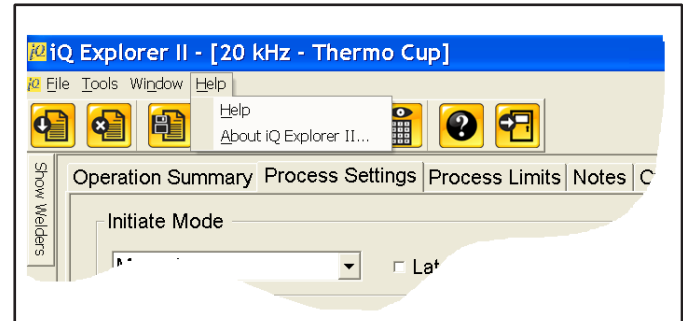


Figure 4-51 Help File Access from Top Menu Bar

Continued

Using the Index Tab and the Contents Tab

The figures below illustrate that the term, *Cycle Data Storage* was found through both the Index and Contents tabs of the Help file.

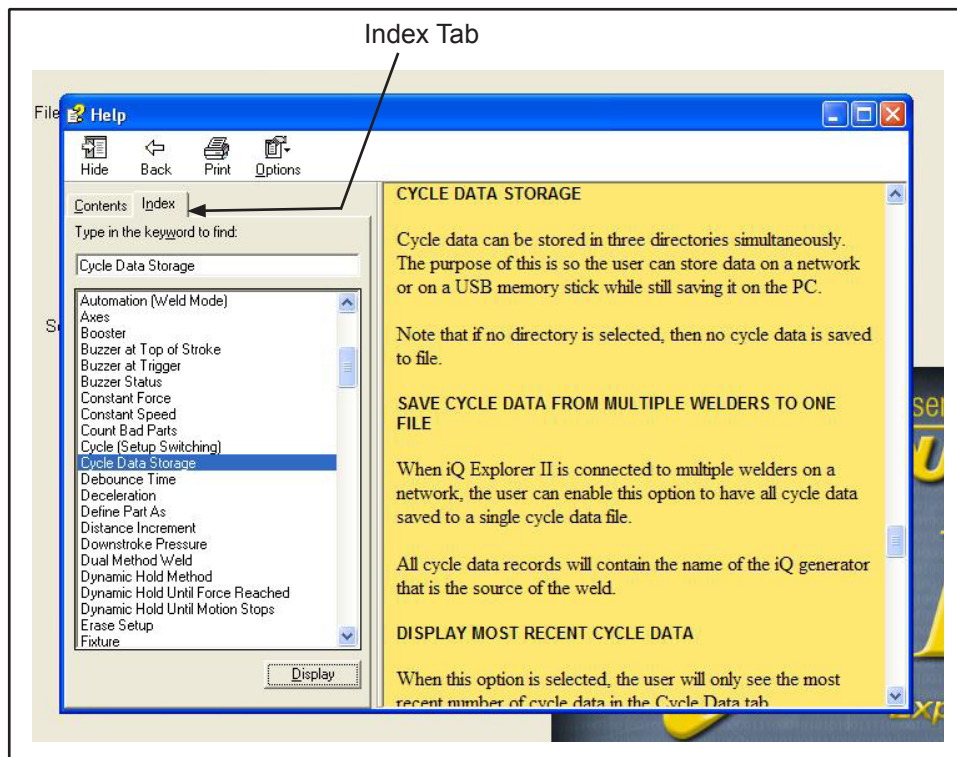


Figure 4-52 Help File - Using the Index Tab

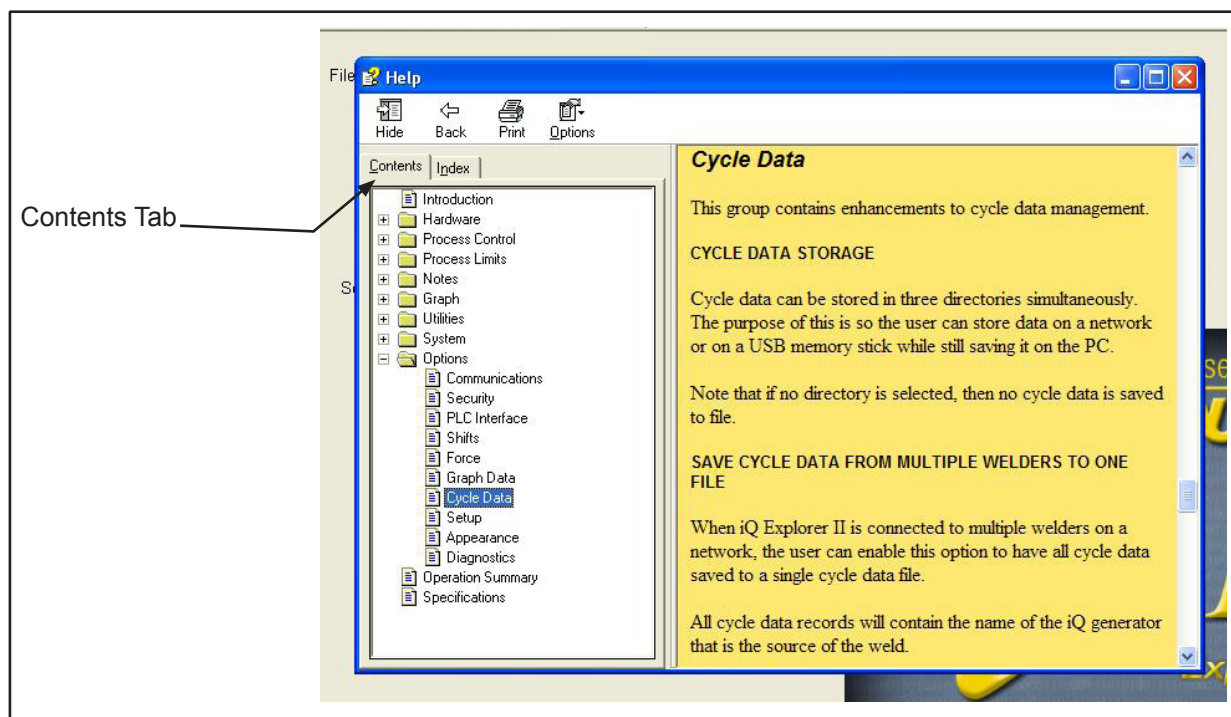


Figure 4-53 Help File - Using the Contents Tab

Software Prompts

One of the functions the software provides is to notify the operator of a condition that needs immediate attention.

These notifications may occur for one of these reasons:

- the *iQ Explorer II* software requires that a value or other data be entered, or
- the generator may have a error/fault/alarm.

So, in response to these situations, the *iQ Explorer II* displays windows with prompts for the operator.

Several examples are shown in Figure 4-54 below, and in Figure 4-55 on the next page.

NOTE

Refer to Making an Entry, Page 31 for information about putting information in an entry box.

NOTE

The material in this section of the User's Manual is intended to offer general guidance in identifying the kinds of messages that may arise.

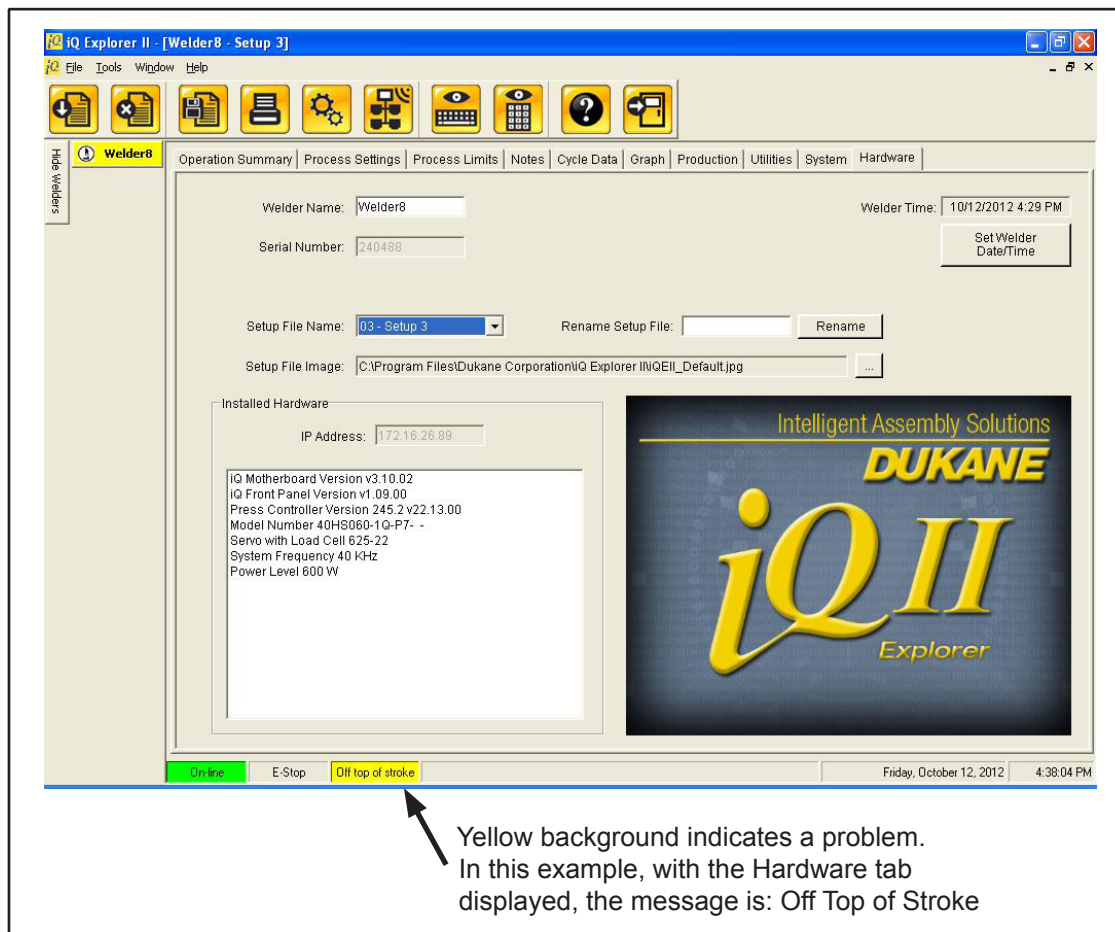


Figure 4-54 Problem Prompt in Yellow

Continued

Parameter Conflict Example

In the following example shown in Figure 4-55 below, yellow is used in several areas of the display not only to call attention to a problem, but also to show what parameter needs to be addressed.

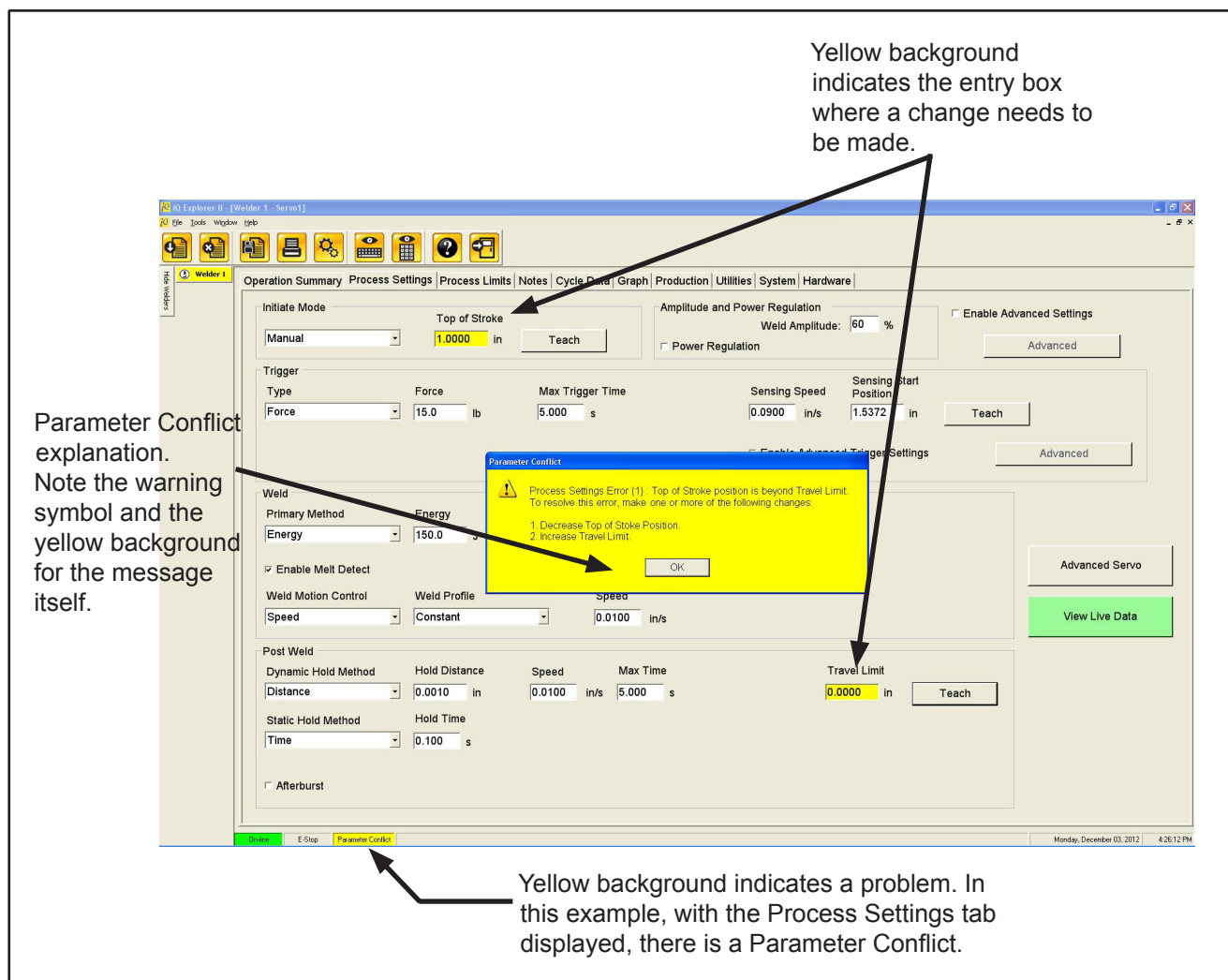


Figure 4-55 Parameter Conflict Display

SECTION 5

Networking

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Introduction

iQ Explorer II is designed to connect to one or more ES model iQ welders via Ethernet using TCP/IP protocol. Configuration of the network depends on the user's needs. This section offers various options regarding the configuration of your network of iQ products.

DHCP

ES Model *iQ* welders are capable of DHCP support. All Windows PCs that are capable of using TCP/IP protocol support DHCP, as well. DHCP enabled is the default setting in both cases.

DHCP is a TCP/IP standard that reduces the complexity and administrative overhead of managing network client IP addresses.

A DHCP server available on a network supplies IP addresses to DHCP clients. Once a DHCP client obtains an IP address from the DHCP server, then that client will obtain the same IP address as long as the DHCP server permits it.

If no DHCP server is available on a network, following a timeout, the DHCP client will self-assign a random IP address in the range from 169.254.0.0 to 169.254.255.255.

Network Settings on the *iQ* ES Generator

Configuration of network settings on the *iQ* ES model generator can be found by pressing the **Utilities/Hardware** button, then the **Hardware Setup** button, then scroll down to **Network Settings** and press that button. All network configuration settings from the ES are available here. To configure a hard IP address on the *iQ* ES model generator, disable DHCP, select **IP Address** from the list, and enter a new IP address as you would any other parameter for the generator.

Network Settings

Direct Connection

The most common use for *iQ Explorer II* is directly connected to an *iQ* ES generator using an HMI purchased from Dukane. Although this is a simple “network”, there are a few ways to configure it.

DHCP Enabled

As described above, if the user enabled DHCP on both the HMI and the *iQ* ES generator, those devices will self-assign random IP addresses in the range 169.254.0.0 to 169.254.255.255.

The main drawback to this configuration is that the timeout on the HMI (or any PC) is usually somewhere between 30 and 60 seconds. This could be unacceptable. The timeout to self-acquire an IP address on the *iQ* ES generator is insignificant.

DHCP Disabled on the HMI

To reduce the long delay due to the DHCP server timeout, Dukane assigns the HMI in the factory a hard IP address of 169.254.0.10 and 169.254.0.11 to its two local connections.

DHCP Disabled on the *iQ* ES Generator

To reduce unnecessary extra processing on the HMI, *iQ Explorer II* may be configured to exclusively connect to one IP address.

First, the user should disable DHCP on the *iQ* ES generator. The default IP address assigned to the *iQ* ES generator when DHCP is disabled is 169.254.0.2. This is acceptable.

On *iQ Explorer II* click on the Options button, and look at the Communications tab. At the bottom of the tab there is a section labeled Permitted IP Address List. Press the Modify List and add 169.254.0.2 to the list. Press OK to exit both windows. See Figure 5-8.

Now an explicit connection between the HMI and the *iQ* ES generator is established. This is the optimum connection between an HMI and an *iQ* ES generator.

HMI Directly Connected to a Single Generator

1. Open Network Connections in the Windows Control Panel. The window should be similar to the one shown below. Right-click on Local Area Connection, and select Properties.

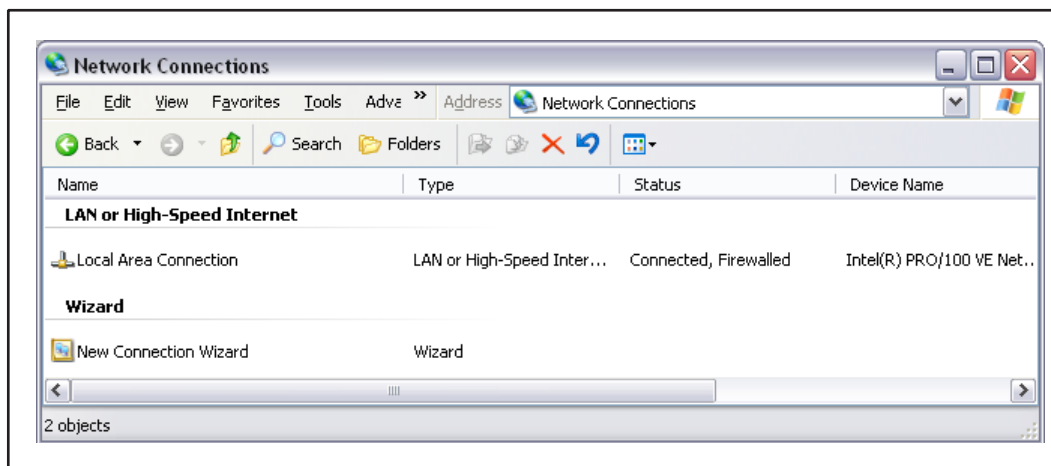


Figure 5-1 Network Connections Window

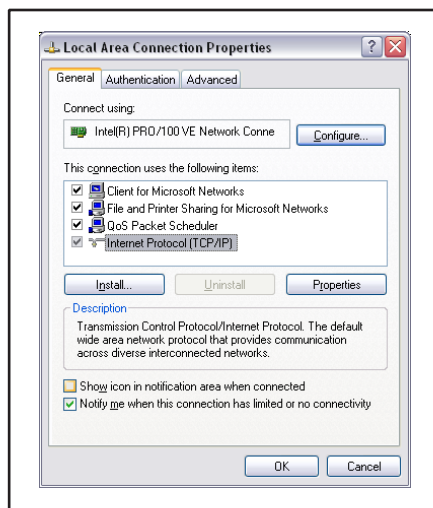


Figure 5-2 Local Area Connection Properties

Continued

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2. In the Internet Protocol (TCP/IP) Properties window, enter the following IP address: **169.254.0.10**
3. Enter Subnet mask: **255.255.0.0**.
See the Figure below.

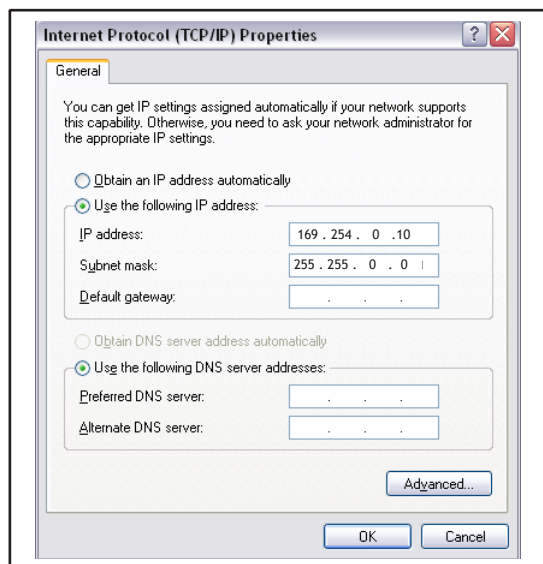


Figure 5-3 Internet Protocol (TCP/IP) Properties

4. Click OK, and close the Network window.
You may need to restart the computer before changes take effect.
5. Run **iQ Explorer II**.
 - At first connection, **iQ Explorer II** and the **iQ** ES generator connect immediately using their default network configurations.
 - When connection has been made, the welder(s) available to the software are shown when the user presses the **Show Welders** button on the toolbar on the left of the application. See Figure 5-4 to the right.
 - An example list of available welders is shown in Figure 5-5 to the right. Notice that the button has changed to **Hide Welders**.

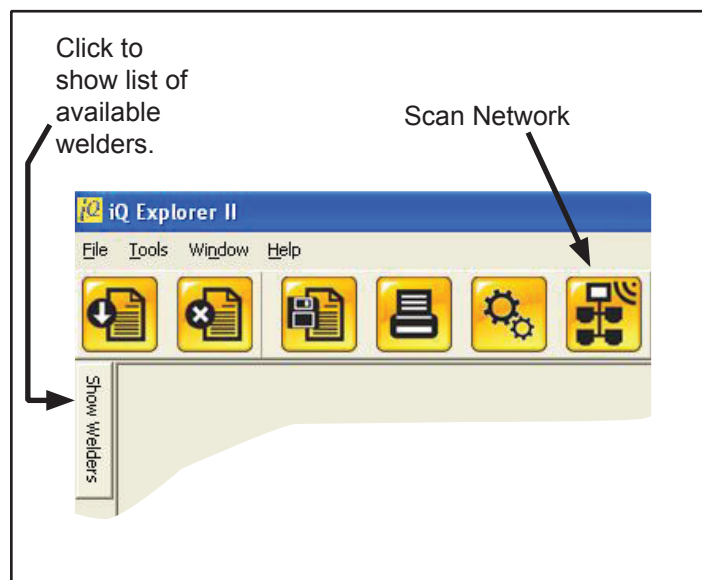


Figure 5-4 Show Welders - 1

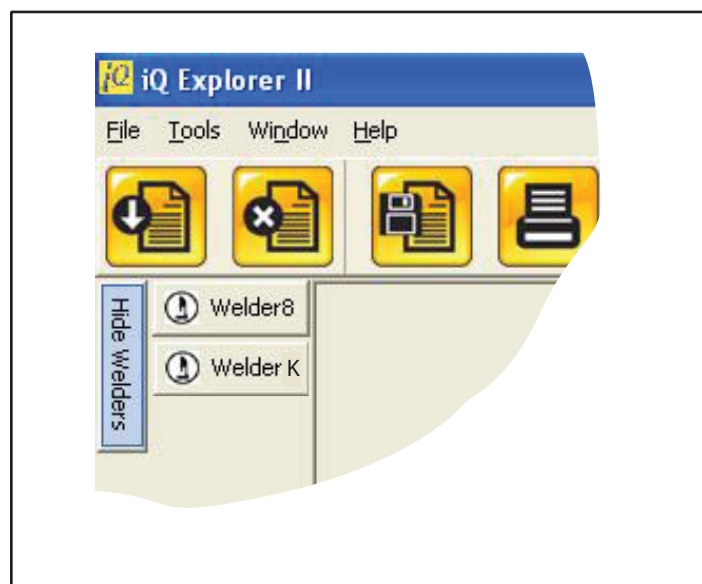


Figure 5-5 Show Welders - 2

Continued

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If nothing is displayed after pressing the **Show Welders** button:

- Check that the correct subnet was entered.
 - Check that the part of the IP address that is masked by the subnet is entered correctly.
 - Your firewall could be preventing communications. In that case, see the IT administrator for help.
6. If the generator's name is displayed, click that name, and you are ready to start configuring your generator.

Connection through a Stand-alone Network

Using the simplified illustration shown in Figure 5-6:

1. Connect the computer and the *iQ* ES generator to the Ethernet switch. Every computer and generator are each considered nodes on the network.
2. Connect the nodes to the Ethernet switch to establish cross-connectivity through the stand-alone network.

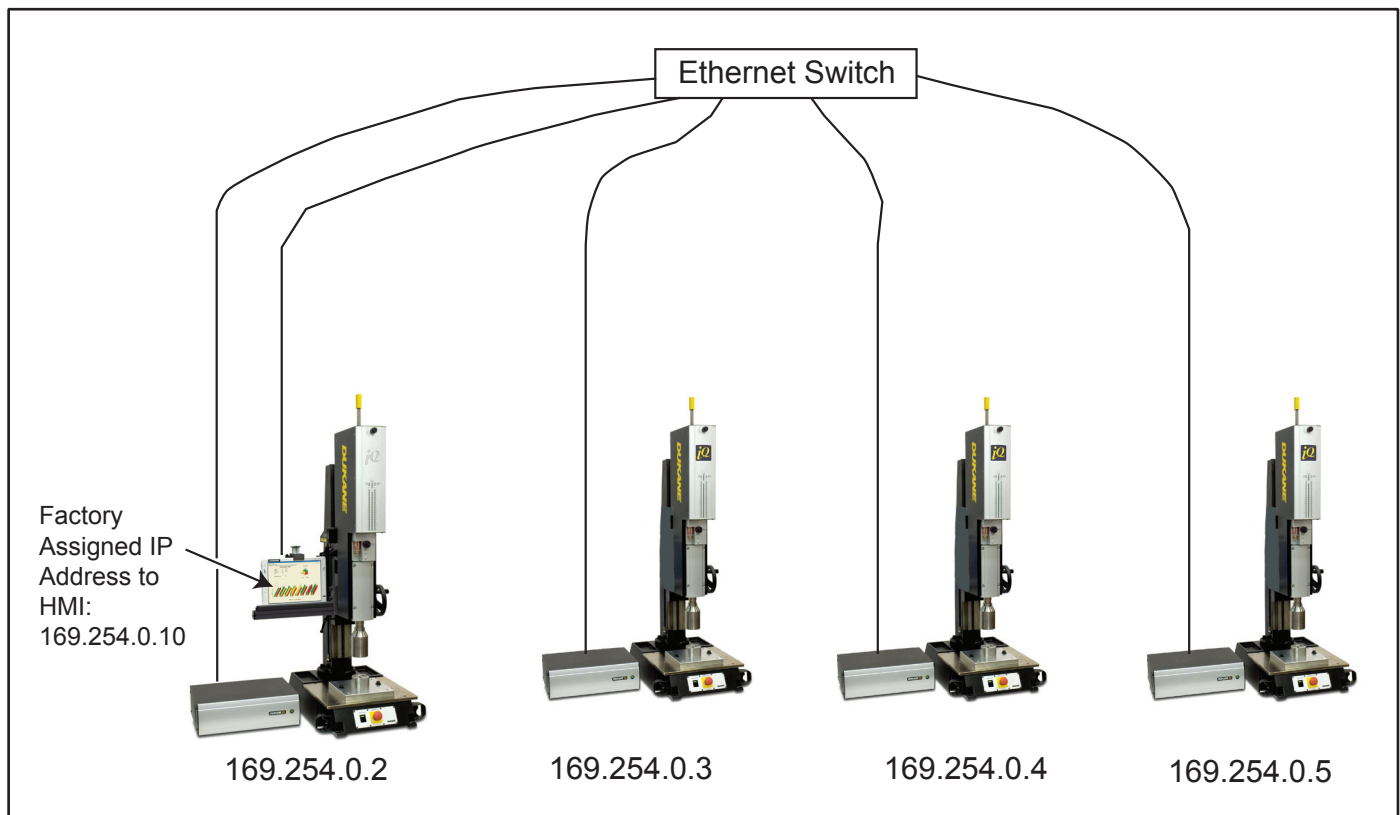


Figure 5-6 Simple Stand-alone Network Configuration

Connection to a Local Area Network

Most companies have a DHCP server running on their Local Area Network (LAN). Simply connect all ES model *iQ* welders to the LAN, enable DHCP, and the DHCP server will assign a unique IP address to each ES.

When DHCP is enabled on an HMI (select **Obtain an IP address automatically** from the TCP/IP properties), it too can have a unique IP address assigned.

However, the HMI does not have much available storage and it has below average processing power relative to standard laptops and desktops available today. Factoring in the likely requirements for anti-virus software and other software that is required for PCs on a company LAN, the HMI is not the best host for *iQ Explorer II* in this configuration.

iQ Explorer II can run on any Windows operating system available at the time of the writing of this manual, so we recommend using a PC supplied by the user's IT department in this type of network configuration.

NOTE

If any installed HMI has a one-to-one relationship with its welder (as shown in Figure 5-7), then the welder IP address should be added to its *Permitted IP Address List*. The DHCP server assigns an IP address to the welder, and that IP address is what should be added to the *Permitted IP Address List*.

NOTE

A desktop PC with *iQ Explorer II* does not need any IP configuration. It automatically finds the generators on the network as long as a firewall or router permits UDP broadcast packets.

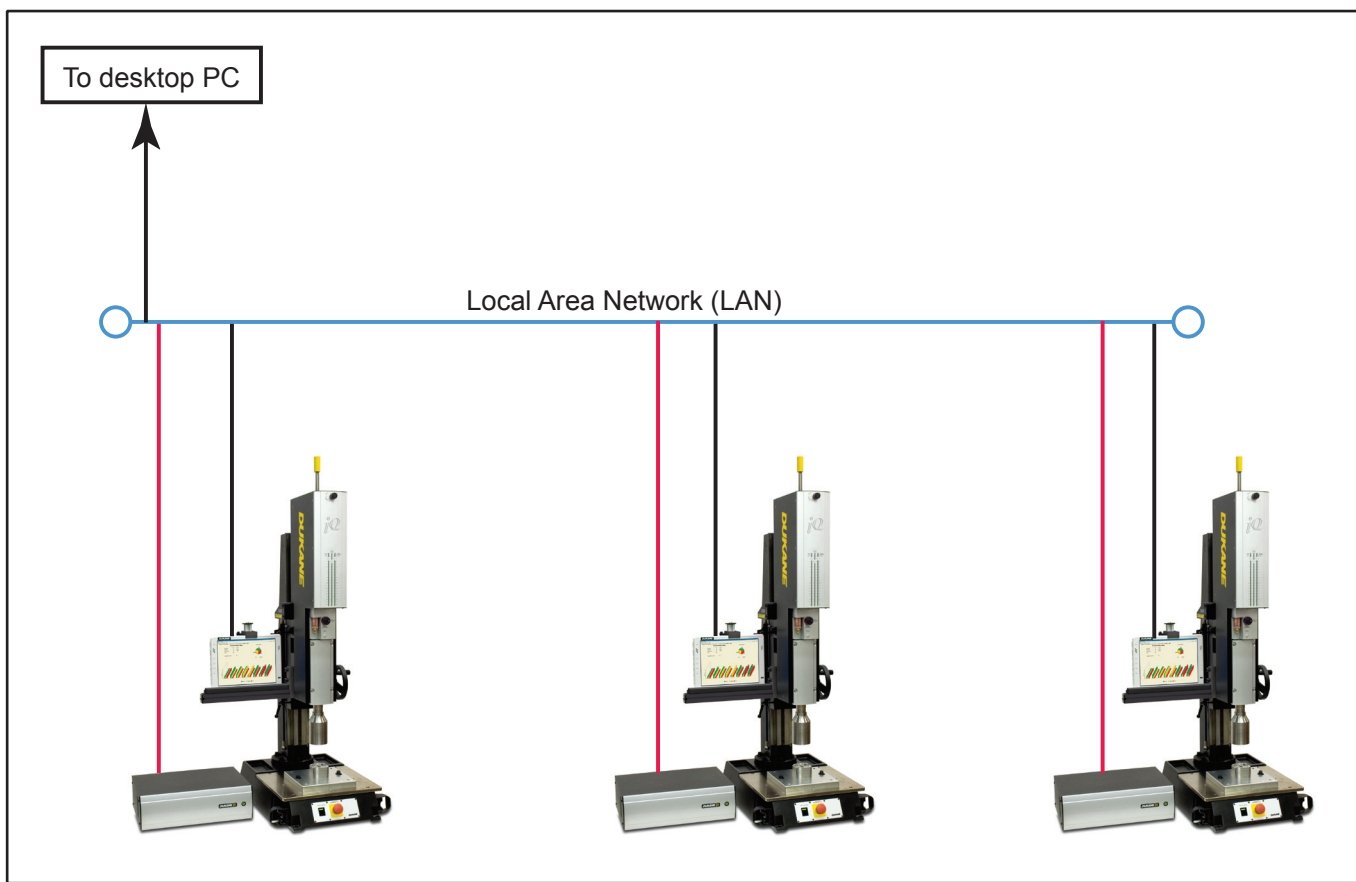


Figure 5-7 Connection to Local Area Network

Continued

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Modify the Permitted IP Address List

1. Click the Options icon. 
2. Go to the Communications tab.
3. See Figure 5-8 for a view of this tab.

Auto-Display Welder Contents **A**

Enable this feature to always display the user interface immediately following the detection of the welder. This is best used when *iQ Explorer II* is directly connected to a single generator.

Permitted IP Addresses **B**

Add IP addresses of *iQ* generators to this list to limit the *iQ Explorer II* interface to only those on the permitted list. This is best used when many *iQ* generators are present on a single network and *iQ Explorer II* is dedicated to a subset of the generators on that network.

NOTE

Dukane recommends: Add the list of generator IP addresses to the *Permitted IP Address List* of *iQ Explorer II*. That reduces the impact of handling network overhead for the HMI.

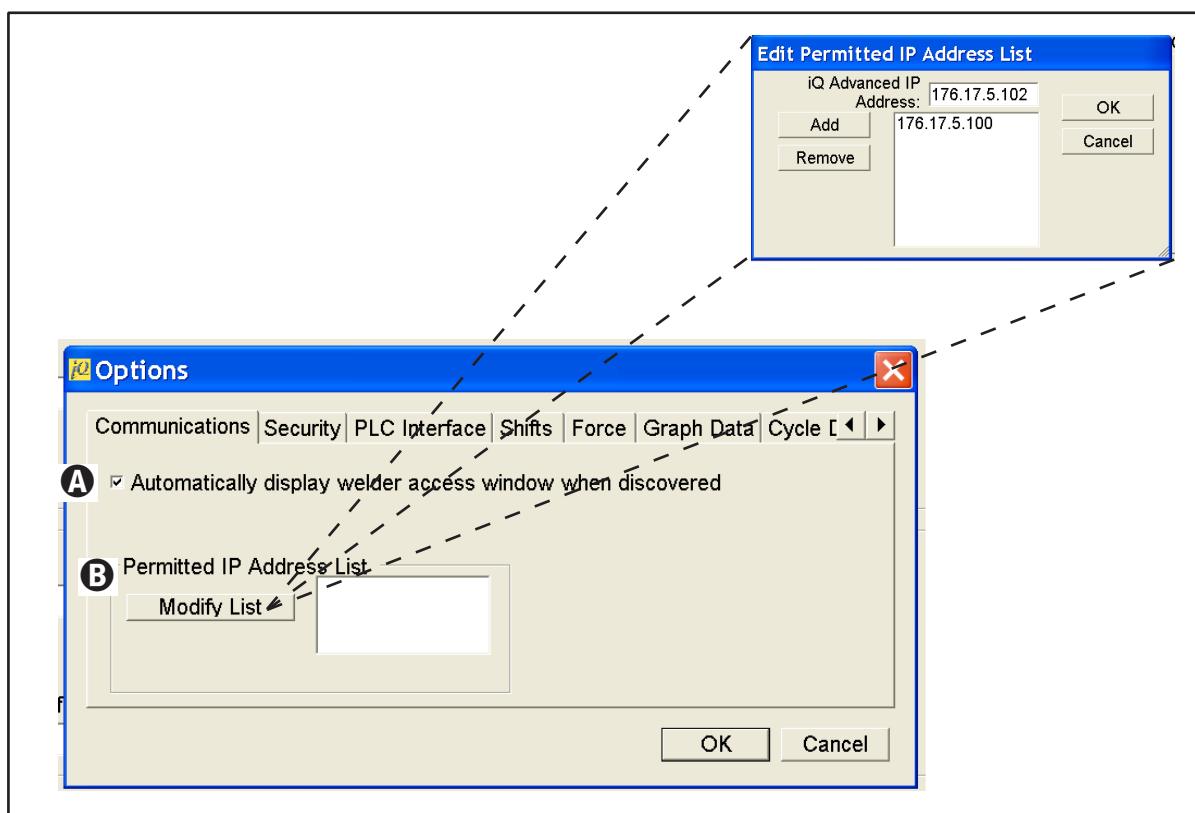


Figure 5-8 Options - Modify Permitted IP Address List

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SECTION 6

Contacting Dukane

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Contacting Dukane

Identify Equipment

When contacting Dukane about a service-related problem, be prepared to give the following information:

- Model and serial numbers of the press and generator.
- Fault/error/alarm indicators from the generator display or *iQ Explorer II* software.
- Software versions. (On generators with a display, go to Main Menu and press Help. On generators without a display, in *iQ Explorer II*, go to Help on the top menu bar, and select About iQ Explorer II.)
- Problem description and steps taken to resolve it.
- Line voltage(s) for press and generator.

Many problems can be solved over the telephone, so it is best to call from a telephone located near the equipment.

Intelligent Assembly Solutions

Mailing Address: Dukane Ultrasonics
2900 Dukane Drive
St. Charles, IL 60174 US

Phone: (630) 797-4900

E-mail: ussales@dukane.com

Fax:
Main (630) 797-4949

Service & Parts (630) 584-0796

Website

The website has information about our products, processes, solutions, and technical data. Downloads are available for many kinds of literature.

Here is the address for the main website:

www.dukane.com/us/

You can locate your local representative at:

www.dukane.com/us/sales/intsales.htm

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Regulatory Agency Compliance

FCC

The generator complies with the following Federal Communications Commission regulations.

- The limits for FCC measurement procedure MP-5, “Methods of Measurement of Radio Noise Emissions from ISM Equipment”, pursuant to FCC Title 47 Part 18 for Ultrasonic Equipment.

CE Marking

This mark on your equipment certifies that it meets the requirements of the EU (European Union) concerning interference causing equipment regulations. CE stands for Conformité Européenne (European Conformity). The equipment complies with the following CE requirements.

- The EMC Directive 2004/108/EC for Heavy Industrial —
EN 61000-6-4: 2001
EN 55011: 2003
EN 61000-6-2: 2005
EN 61000-4-2
EN 61000-4-3
EN 61000-4-4
EN 61000-4-5
EN 61000-4-6
EN 61000-4-8
EN 61000-4-11
- The Low Voltage Directive 2006/95/EC.
- The Machinery Directive 2006/42/EC.
EN 60204: 2006
Safety of Machinery - Electrical Equipment of Machines Part 1: General Requirements.

IP (International Protection) Rating

The *iQ* generator as well as all models of the servo press and remote controller have an IP rating from the IEC (International Electrotechnical Commission).

The rating is IP2X, in compliance with finger-safe industry standards.

Appendix C



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Dukane ISO

ISO CERTIFICATION

Dukane chose to become ISO 9001:2008 certified in order to demonstrate to our customers our continuing commitment to being a quality vendor. By passing its audit, Dukane can assure you that we have in place a well-defined and systematic approach to quality design, manufacturing, delivery and service. This certificate reinforces Dukane's status as a quality vendor of technology and products.

To achieve ISO 9001:2008 certification, you must prove to one of the quality system registrar groups that you meet three requirements:

1. Leadership
2. Involvement
3. Quality in Line Organizations and Quality System Infrastructure.

The ISO 9001:2008 standard establishes a minimum requirement for these requirements and starts transitioning the company from a traditional inspection-oriented quality system to one based on partnership for continuous improvement. This concept is key in that Dukane no longer focuses on inspection, but on individual processes.

Dukane's quality management system is based on the following three objectives:

1. Customer oriented quality. The aim is to improve customer satisfaction.
2. Quality is determined by people. The aim is to improve the internal organization and cooperation between staff members.
3. Quality is a continuous improvement. The aim is to continuously improve the internal organization and the competitive position.

**ISO 9001:2008
CERTIFIED**

Dukane products are manufactured in ISO
registered facilities

Please refer to our website at:
www.dukane.com/us/sales/intsales.htm
to locate your local representative.

